

APPENDIX G

Hazardous Waste Streams

Classification of Potential Hazardous Wastes Generated & Preferred Disposal Options for Potential Waste Streams

Waste	Preferred Disposal Option	Description/ Management Option	Hazardous Waste Status
Aerosols	<ul style="list-style-type: none"> Recycle empty cans if possible. 	Recycled or disposed (Emptied)	Not a hazardous waste
		Recycled or disposed (Not Emptied)	Make a hazardous waste determination and manage properly.
Antifreeze	<ul style="list-style-type: none"> Recycle. Hire a waste hauler to collect and dispose. Purchase an on-site recovery unit. 	Recycled	Make a hazardous waste determination and manage properly.
		Disposed	Make a hazardous waste determination and manage properly.
Batteries (Lead Acid)	<ul style="list-style-type: none"> Recycle under Title 40, Part 266.80 of the Code of Federal Register (40 CFR 266.80). 	Recycled	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.
Batteries (Ni-Cad)	<ul style="list-style-type: none"> Recycle under Title 329, Article 3.1, Rule 16 of the Indiana Administrative Code (329 IAC 3.1-16) incorporating 40 CFR 273. 	Recycle as universal waste	Universal waste
		Disposed	Make a hazardous waste determination and manage properly.
Flares	<ul style="list-style-type: none"> Encourage boaters to keep on board as extras. Store in well marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Make sure to notify the Coast Guard and fire department first. Encourage boaters to take flares to a household hazardous waste collection site. 	Reused for intended purpose	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.

Waste	Preferred Disposal Option	Description/ Management Option	Hazardous Waste Status
Fluorescent Light Tubes & Lamps (including compact fluorescent light bulbs)	<ul style="list-style-type: none"> Recycle under Title 329, Article 3.1, Rule 16 of the Indiana Administrative Code (329 IAC 3.1-16) incorporating Title 40, Part 273 of the Code of Federal Register (40 CFR 273). 	Recycle as universal waste	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.
Fuel	<ul style="list-style-type: none"> Add stabilizer in winter and octane booster in spring. Mix with fresh fuel and reuse. Send for re-refining. 	Reused for intended purpose or re-refined	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.
Mercury Switches	<ul style="list-style-type: none"> Collect and send for recycling. Encourage boaters to take the switches to a household hazardous waste collection site. 	Recycled as universal waste	Universal waste
		Disposed	Make a hazardous waste determination and manage properly.
Oil	<ul style="list-style-type: none"> Collect and send for recycling. Use waste oil for space heating in approved used oil burner. Encourage boaters to take their used oil to a household hazardous waste collection site. 	Recycled	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.
Oil Filters	<ul style="list-style-type: none"> Drain oil and send oil and filter for recycling. 	Recycled (oil and filters)	Not a hazardous waste
		Disposed (oil and filters)	Make a hazardous waste determination and manage properly.

Waste	Preferred Disposal Option	Description/ Management Option	Hazardous Waste Status
Paint (Antifouling) & Debris	<ul style="list-style-type: none"> Switch to a long-lasting, low-toxicity paint. Encourage boaters to use paints that contain the least amount of toxins necessary. Discourage use of antifouling paints for fresh water boaters. 	Disposed	Make a hazardous waste determination and manage properly.
Paint Scraping & Sanding Waste	<ul style="list-style-type: none"> Conduct work away from the water's edge. 	Disposed	Make a hazardous waste determination and manage properly.
Pesticides	<ul style="list-style-type: none"> Reuse on site. Rinse container and use rinsate as makeup for next batch or spray out through sprayer. Encourage boaters to take unused containers to a household hazardous waste collection site. 	Disposal of rinsed containers	Not a hazardous waste
		Disposal of containers not rinsed or containing product	Make hazardous waste determination and manage properly.
Solvents & Cleaners (Petroleum Based)	<ul style="list-style-type: none"> Reused on site for other projects. Encourage boaters to take to a household hazardous waste collection site. 	Reused on site	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.
Sorbents	<ul style="list-style-type: none"> Recycle under the used oil rule (if contaminated with used oil only). 	Recycled	Not a hazardous waste
		Disposed	Make a hazardous waste determination and manage properly.

This page was intentionally left blank.

The term used oil includes any petroleum-based or synthetic oil that has been used, such as engine oil, sludge from used oil tanks, transmission fluid, refrigeration oil, compressor oil, hydraulic fluid, etc.

As oil circulates through an engine and pumps, it may become contaminated with heavy metals, including lead. High concentrations of lead may make used oil a hazardous waste. Oil may also become contaminated through contact with gasoline, which could make the used oil a hazardous waste due to benzene contamination and/or flammability. In addition, oil can also become contaminated with products of incomplete combustion, which contain a number of known carcinogens.

Two environmental management options currently exist for facilities that generate used oil. The first option is to recycle used oil or burn it for energy recovery under the used oil rule. The second option is to dispose of used oil, following all applicable solid and hazardous waste rules. By managing used oil under the used oil rule (rather than under the solid and hazardous waste rules), the regulatory requirements will be lessened.



■ Option 1: Recycling or Burning for Energy Recovery (Used Oil Rule)

Complying with the used oil rule means that a facility does not have to manage used oil or the sludge from a used oil tank as a hazardous waste. Even if the used oil to be recycled or fuel blended is contaminated with a hazardous waste from product formulation or through its intended use (such as when contaminants mix with oil in the crankcase), the used oil is still regulated under the used oil rule rather than as a hazardous waste. In order to comply with the used oil rule, a facility must properly manage its used oil, and must either recycle used oil or burn it for energy recovery. Keep in mind that oil that is intentionally or accidentally mixed with a hazardous waste must be managed as a hazardous waste.

Note that under the used oil rule, both re-refining and burning of used oil for energy recovery are considered to be forms of recycling. Re-refining is the preferred method of managing used oil because it preserves our limited natural resources.

If a facility chooses to burn used oil in an onsite space heater, be aware that there are additional rules that must be followed under the used oil rule. Because small oil-burning space heaters are not as clean burning or as efficient as industrial furnaces, IDEM recommends that used oil be sent to a fuel blender rather than burning it on-site.

■ Option 2: Disposal (Solid and Hazardous Waste Rules)

Used oil that cannot be managed under the used oil rule (i.e., because of contamination with a hazardous waste or other material) is subject to all applicable solid and hazardous waste rules. Under the solid and hazardous waste rules, a facility must make a hazardous waste determination and manage used oil accordingly.

If a facility determines that its used oil is not a hazardous waste, it is still prohibited from being sent to a solid waste landfill because these landfills do not accept liquid waste or waste that contains free liquids (i.e., wastes containing liquids that will readily pour.) Therefore, used oil must be sent to a facility that is capable of handling liquid waste or that can solidify the waste prior to disposal.

What must be done to be in compliance?

Managing used oil may be done in a number of different ways. Listed below are the various options as well as the requirements for each.

If the used oil rule is being followed, a facility must:

- Recycle used oil or burn self-generated used oil for energy recovery in an on-site space heater.
- Not mix used oil with hazardous wastes.
- Determine the halogen content of the used oil by using generator knowledge or by using a test kit for halogens (available from safety supply dealers.) If the used oil contains more than 1,000 parts per million total halogens, it is presumed to have been mixed with a hazardous waste and must be treated as a hazardous waste unless a facility can demonstrate that the source of the halogens was not from mixing a hazardous waste with used oil. To avoid having to manage used oil as a hazardous waste, do not add solvents or anything else to the used oil.
- Mark containers that hold used oil with the words “Used Oil.”

For off-site shipments, a facility must ensure that the transporter used has a U.S. EPA identification number. A facility may personally transport less than 55 gallons of its own used oil (or oil that has been collected through a household do-it-yourself collection program such as that described below) at any time to a used oil collection center or to a facility’s own aggregation point without obtaining a U.S. EPA ID number. Note that an aggregation point is basically a collection

center designed to accept small amounts of used oil and store it until enough is collected to ship it elsewhere for recycling. Aggregation points collect oil only from facilities run by the same owner/operator and from individuals.

If a facility is following the used oil rule and burning used oil on-site, it must:

- Follow all of the above-listed requirements.
- Have a used oil-fired space heater with a maximum capacity of not more than 500,000 Btu/hr.
- Vent combustion gases from the heater to the ambient air.
- Burn only used oil that a facility generates or used oil received from households that bring their used oil to the facility.

If a facility is following the solid and hazardous waste rules, it must:

- Determine if the used oil is a hazardous waste. If the oil is considered to be a hazardous waste, it must be managed according to the hazardous waste rules.

If used oil is not a hazardous waste, it still must be managed under IDEM's solid waste rules and sent to a facility that is permitted to accept this type of waste.

Regardless of whether a facility follows the used oil rule or the solid and hazardous waste rules, it must do the following:

- Clean up spills promptly.
- Keep oil storage containers in good condition. Drums used to store oil cannot be rusting or leaking.
- Develop a spill prevention, control and countermeasures plan if a facility stores oil in tanks or containers having an accumulative storage capacity in excess of 1,320 gallons or follow the underground storage tank regulations.
- Report oil spills.
- Not apply used oil as a dust suppressant.
- Not store used oil in surface impoundments (i.e., lagoons.)



Used Oil Heater (Photo by Joe Exl, IDNR)

A Good Idea!

Start a Do-It-Yourself (DIY) Oil Collection Program. The U.S. EPA estimates that millions of gallons of used oil are released into the environment each year by household do-it-yourselfers. By participating in a DIY oil collection program, a facility can help prevent oil waste from polluting the environment and can also demonstrate a facility's commitment to customer service and community. Prior to starting a DIY collection program, a facility must contact the Plan Review section of the Indiana Department of Homeland Security's Division of Fire and Building Safety at (317) 232-1431 to ensure that it is following applicable regulations. A facility must also follow the management standards of IDEM's used oil rule, accept DIY used oil, and send the DIY oil to a recycler or burn it for energy recovery.

Many used oil transporters will pick up used oil, including used oil that is collected from do-it-yourselfers, at no charge if a minimum of 200 gallons of used oil is present per pickup. Some used oil transporters will also provide a double-walled oil storage tank and will train staff in the proper collection of DIY used oil. Contact a used oil transporter to request additional information about participating in a DIY oil collection program.

Some suggestions for implementing a used oil-recycling program include:

- Offer special reusable containers to do-it-yourselfers. Avoid accepting other used oil containers.
- Use a separate drum or tank for do-it-yourselfer oil to avoid potential contamination of the facility's used oil.
- Visually inspect used oil brought in by do-it-yourselfers. Do not accept suspicious materials.
- Have the do-it-yourselfers sign a log with a statement verifying the material is used oil only.
- Post a sign and provide written materials describing the program.
- Include this public service and any other environmental efforts in the facility's advertisements.

Guidance Documents

Visit IDEM's Web site at www.idem.IN.gov/cleanmarina for these guidance documents concerning used oil:

"Complying with Indiana's Used Oil Rule"

"Indiana Used Oil Handling Facilities and Transporters"

"Used Oil Filters"

When a used oil filter is removed from a vehicle, approximately one pint of oil may remain trapped in the filter. The used oil and sludge that remain in the filter may contain contaminants such as heavy metals that are picked up as the oil circulates through the engine. High concentrations of heavy metals may cause used filters to demonstrate hazardous waste characteristics, making the filters subject to hazardous waste regulations if the filters are not properly drained. There are several management options for handling used oil filters. The regulations a facility must follow depend on whether the used filters are properly drained and what is subsequently done with them (e.g., recycle, burn, discard.)



Used Oil Filters (Photo by Joe Exl, IDNR)

Properly hot-drained filters are exempt from Indiana’s hazardous waste regulations and may be disposed as solid waste. The term “hot drain” means to immediately drain the filter after it is removed from a vehicle that is at or near the engine’s operating temperature, while employing some additional means to facilitate draining such as puncturing, crushing, or dismantling.

Undrained filters may be managed under Indiana’s used oil rule if the filters are recycled or burned for energy recovery (see “Used Oil Management” on pages 129–132 for additional information on Indiana’s used oil rule). Undrained filters that are discarded are subject to all applicable solid and hazardous waste rules. Note that even if a facility’s used oil filters are not considered to be a hazardous waste, they still cannot be sent to a landfill because of the restrictions on wastes containing free liquids (liquids that will readily pour). Instead, the filters must be managed under IDEM’s solid waste rules and sent to a facility that is capable of handling liquid waste or that can solidify the waste prior to disposal.

For More Information

Appendix D – (pages 105-110)
Complying With the Hazardous Waste Rules (contains information about hazardous waste characteristics)

Large filters, such as those used in heavy-duty vehicles, may be terne-plated. Terne is an alloy of tin and lead, and it is used to strengthen the shells of larger oil filters. Terne-plated filters are exempt from hazardous waste rules only if they are recycled as a scrap metal. If they are disposed of, they are subject to a hazardous waste determination and, if found hazardous, must be managed in accordance with all applicable hazardous waste requirements.

What must be done to be in compliance?

As stated above, managing used oil filters may be done in a number of different ways. Listed below are the regulations that a facility must follow depending on the option that is used:

If a facility chooses to hot drain its used oil filters, it must:

- Puncture the filter anti-drain back valve or the filter dome end and hot drain the filters; or
- Perform any other equivalent hot draining method that will remove the used oil so that the filters contain no free liquids. Equivalent methods include crushing or dismantling the filters.
- Properly manage the oil drained from the filters (see “Used Oil Management” on pages 129-132 for more information).

If a facility does not hot drain filters, it must determine if the filters demonstrate hazardous waste characteristics. Filters that demonstrate hazardous waste characteristics are considered to be a hazardous waste and must be managed accordingly.



Draining an Oil Filter (Photo by Joe Exl, IDNR)

ANTIFREEZE

Under Indiana’s hazardous waste rules, ethylene glycol and propylene glycol (i.e., virgin antifreeze) are not listed hazardous wastes. However, contact with cooling system parts may cause used antifreeze to become contaminated with heavy metals, such as lead, chromium and cadmium. This contamination may make the antifreeze a hazardous waste. Similarly, used antifreeze that is mixed with other wastes (during storage, etc.) may result in a mixture that is a hazardous waste. Each facility is responsible for making a hazardous waste determination on its used antifreeze. This determination can be based on analytical test results of the used antifreeze, or it may be based on the knowledge of the waste and how it was generated and managed.



Antifreeze storage container

IDEM has reviewed data on used antifreeze (both ethylene glycol and propylene glycol-based) from a broad range of vehicle types and ages. The results of this data indicate that used antifreeze does not appear to exhibit the characteristics of a hazardous waste. However, it is possible that a facility could generate used antifreeze that is a hazardous waste if the facility:

- Generates used antifreeze primarily from older vehicles (i.e., vehicles with metal radiators and lead soldered joints).
- Generates a type of antifreeze other than traditional ethylene glycol or propylene glycol-based antifreeze.
- Mismanages its used antifreeze after it has been drained from the vehicle (i.e., if the antifreeze is mixed with hazardous wastes or other contaminants).

For More Information

Visit IDEM’s Web site at www.idem.IN.gov/cleanmarina for the agency’s regulatory analysis of used antifreeze.

What must be done to be in compliance?

If a facility's used antifreeze is considered to be a hazardous waste, the facility must manage it according to the hazardous waste rules. Listed below are some of the proper management requirements for small and large quantity generators. The full listing of requirements can be found under 40 CFR 262. While conditionally exempt small quantity generators are not required to comply with 40 CFR 262 it is recommended that they follow the same management practices.

- Label all containers in accordance with the hazardous waste rules. Remember to clearly mark the words "HAZARDOUS WASTE," as well as the date the waste began to accumulate (or the date the container was completely filled if there is a satellite accumulation area onsite), on the used antifreeze container.
- Keep storage containers closed to prevent evaporation and spills.
- Conduct weekly inspections to ensure that the containers are in good condition. Look for leaks and for deterioration caused by corrosion or other factors. If a container leaks, put the hazardous waste or the leaking drum in another container.
- Keep monthly records of the amount of used antifreeze that is accumulated.
- Manifest drums of used antifreeze to a waste treatment, storage or disposal facility.
- Use only permitted waste transporters that have obtained a U.S. EPA identification number to transport drums of antifreeze off site.

If it is determined that a facility's used antifreeze is not a hazardous waste, the facility must:

- Never put antifreeze into the environment (i.e., onto the ground or into streams).
- Never pour antifreeze into any drains if a facility is on city water, unless the local wastewater treatment plant has been contacted in order to make sure it can handle such a discharge.
- Never discharge antifreeze to a septic system.

If a facility recycles antifreeze on-site, a hazardous waste determination must be made on the filters and sludge, or they can be treated as hazardous wastes. Because the contaminants are concentrated in the filter and/or sludge, it is likely that these may be hazardous wastes.

Can antifreeze be recycled?

Yes, antifreeze can be recycled; however, there are some things to keep in mind.

● Contracting with a Service Company to Recycle Used Antifreeze

Contracting this service to an outside company has certain advantages over purchasing recycling equipment. First, contracting this service does not require the initial capital expense of purchasing a recycling unit. Second, the filters and sludge that are generated during the recycling process may be hazardous wastes. If recycling on-site, a hazardous waste determination must be made and the waste must be managed accordingly. If this service is contracted to an outside company that recycles used antifreeze off-site, that company will be responsible for the hazardous waste generated during the recycling process.

● On-Site Recycling

Using an on-site mobile antifreeze recycling service involves having a recycling service visit the facility with a mobile coolant-recycling unit. Note that the facility will be responsible for any hazardous waste generated as a result of on-site antifreeze recycling. Spent filters and sludge may potentially be hazardous wastes.

● Off-Site Recycling

Another option is to send used antifreeze off-site for recycling with a reputable recycling company. Used antifreeze may be stored on-site for later pickup. Recycling companies usually require a minimum pickup quantity of 50-55 gallons and, in addition to picking up used antifreeze, can also supply recycled antifreeze.



A Good Idea!

Use propylene glycol instead of ethylene glycol-based antifreeze. Propylene glycol is less toxic and studies have suggested that it has the advantage of reduced internal engine corrosion potential.

This page was intentionally left blank.

Marina facility owners have several options when disposing of used lead acid batteries. The rules a facility must comply with are determined by the option chosen. These options are as follows:

■ Option 1: Reclamation/ Recycling

If a facility generates, collects, transports, stores or regenerates lead-acid batteries for reclamation purposes, the facility may be exempt from certain hazardous waste management requirements. However, if a facility is a battery reclaimer and stores batteries prior to reclamation, the facility is subject to many of the hazardous waste management requirements. (A material is “reclaimed” if it is processed to recover a usable product or if it is regenerated. Recovery of lead values from spent batteries is considered reclamation.) Specific requirements concerning the reclamation and recycling of used batteries is contained in 40 CFR 266.80, available on the Web at www.gpoaccess.gov/cfr/index.html.



Spent lead acid batteries should be stored in an area with secondary containment or in an area that provides a means to control and contain any battery acid spillage (Photo by Cathy Csatori, IDEM).

■ Option 2: Managed as Universal Waste

Universal wastes include nickel cadmium and small sealed lead-acid batteries, agricultural pesticides, thermostats and lights/lamps (e.g., fluorescent, high-intensity discharge, neon, mercury vapor, high pressure sodium and metal halide lamps). Used lead-acid batteries managed as universal waste have different, less stringent rules, than those managed as a hazardous waste. For more information about the generation, storage, transportation and disposal of universal wastes, refer to IDEM’s guidance document entitled, “Universal Waste Rule,” available on the Web at www.idem.IN.gov/cleanmarina.

■ Option 3: Managed as Hazardous Waste

Batteries that are not recycled/reclaimed or managed as a universal waste must be managed as hazardous waste in accordance with the hazardous waste rules. For additional information concerning the hazardous waste requirements, see Appendix D, “Complying With the Hazardous Waste Rules,” on pages 105-110.

If Your Facility Sells Batteries

Marinas or boatyards that sell batteries must comply with Indiana Code 13-20-16, available on the Web at www.ai.org/legislative/ic/code/title13/ar20/ch16.html. This law includes but is not limited to:

- Posting signage in a location that can be seen by customers. The sign must be at least 8.5” by 11” in size and must indicate the following:

Recycle your used batteries.
Improper disposal of batteries is against the law.
It is illegal to put used motor vehicle batteries or other vehicle or boat batteries in the trash.
State law requires us to accept your used battery for recycling if you purchase a new battery from us.

- Ensuring that used batteries are properly managed and recycled by doing the following:
 - Properly store all spent lead-acid batteries in an area with secondary containment or in an area that provides a means to control and contain any battery acid spillage. If batteries are stored outdoors, the storage area must be curbed to contain leaks, and covered to prevent snow and rain from entering.
 - Within 90 days from the date the spent lead-acid battery was received, the battery must be transferred:
 - To a wholesaler or to an agent of a wholesaler;
 - To a manufacturer of lead acid batteries;
 - To a facility that recycles lead acid batteries or collects lead acid batteries for delivery to a recycling facility; or
 - To a facility operated as a secondary lead smelter under a valid permit issued by the state in which it is located or by U.S. EPA.



A Good Idea!

Storing batteries on a wire shelf with plastic spill trays placed below the shelf will allow easy inspection of all batteries for damage and will also contain any leaking battery acid. By storing batteries in this manner, it can be readily determined which battery is leaking. Acid collected from the spill tray can be returned to a non-leaking battery that will be sent off-site for reclaiming. Another way to store batteries is to utilize a U.S. EPA-approved storage box.

FLUORESCENT LIGHT TUBES & HIGH INTENSITY DISCHARGE LAMPS (does not include halogen lamps)

Historically, fluorescent tubes and lamps, including compact fluorescent light bulbs, contained a sufficient amount of mercury to make them a hazardous waste when disposed. Some new tubes and lamps are now marketed as containing a reduced amount of mercury, presumably making them a non-hazardous waste when disposed. However, it remains the generator's responsibility to ensure the correct hazardous waste determination is made and to manage the waste accordingly. If a facility is considering purchasing a new



Marina operators should conduct a hazardous waste determination on fluorescent bulbs used at their facility.

type of tube/lamp that is marketed as a nonhazardous waste when disposed, it should request the analytical test results for the product (i.e., toxicity characteristic leaching procedure, otherwise referred to as TCLP) from the vendor. Ask the vendor to explain the TCLP results, or contact IDEM's Office of Land Quality at (317) 308-3103 for assistance.

If the used tubes/lamps are considered to be a hazardous waste, there are two management options for handling waste tubes and lamps—recycle or dispose of them under the universal waste rule, or dispose of them under the hazardous waste rules.

■ Option 1: Recycling or Disposal (Universal Waste Rule)

The universal waste rule is a modification of the hazardous waste rules, and it is designed to reduce regulatory requirements by promoting environmentally-sound recycling and disposal practices. In addition to being easier for businesses to comply with, handling used tubes and lamps under the Universal Waste Rule also reduces the environmental impact associated with disposal under the hazardous waste rules. For more information on universal wastes, refer to IDEM's guidance document entitled, "Universal Waste Rule." This document is available on IDEM's Web site at www.idem.IN.gov/cleanmarina.

FLUORESCENT LIGHT TUBES & HIGH INTENSITY DISCHARGE LAMPS (does not include halogen lamps)

■ Option 2: Disposal (Hazardous Waste Rules)

The second option is to manage used tubes and lamps under the hazardous waste rules. For more information, see Appendix D, “Complying With the Hazardous Waste Rules,” on pages 105-110. Note that discarded tubes and lamps are not counted in determining generator status provided the tubes are shipped off-site for recycling as a universal waste. If used tubes and lamps are thrown in the trash, their total weight must be added to the monthly record for hazardous waste generation.

What must be done to be in compliance?

Listed below are the rules that must be followed depending upon how a facility manages its used tubes and lamps. Regardless of whether a facility follows the universal waste rule or the solid and hazardous waste rules, it must:

- Educate employees on proper handling and emergency procedures associated with the waste tubes/lamps.
- Contain all releases of waste and residues.
- Make a hazardous waste determination on used tubes and lamps and manage them accordingly.

If used tubes and lamps are managed under the universal waste rule, a facility must:

- Package both unbroken and broken tubes/lamps to prevent breakage and a release of contaminants; lamps managed under the universal waste rule may not be intentionally crushed or broken.
- Label the tubes/lamps or the containers holding them with the words “Universal Waste Lamps” or “Waste Lamps” or “Used Lamps” or any other words that accurately identify the universal waste lamps.
- Have used tubes and lamps transported to a universal waste collection center. Note that under the universal waste rule, it is not required that used tubes/lamps be manifested.
- Not accumulate and store used tubes/lamps for longer than a one-year period.

If used tubes and lamps are managed as a hazardous waste, the hazardous waste rules must be followed.

Mercury can be found in bilge pumps and some switches on marine craft and as a vapor in high intensity discharge lamps. Mercury is a highly toxic substance. The amount of mercury in one bilge pump switch (approximately one gram) can contaminate a 20-acre lake to the point where the fish should not be eaten. There is typically enough mercury in these switches to make them a hazardous waste when disposed.



Boaters and marina operators should consult the manufacturer of their bilge pump switches to determine if they contain mercury (Photo by Joe Exl, IDNR).

There are two management options for handling used mercury switches from bilge pumps—recycle or dispose of them under the universal waste rule, or dispose of them under the hazardous waste rules.

■ Option 1: Recycling or Disposal (Universal Waste Rule)

The universal waste rule is a modification of the hazardous waste rules, and it is designed to reduce regulatory requirements by promoting environmentally-sound recycling and disposal practices. In addition to being easier for businesses to comply with, handling used mercury switches under the Universal Waste Rule also reduces the environmental impact associated with disposal under the hazardous waste rules. For more information on universal wastes, refer to IDEM's guidance document entitled, "Universal Waste Rule." This document is available on IDEM's Web site at www.idem.IN.gov/cleanmarina.

■ Option 2: Disposal (Hazardous Waste Rules)

The second option is to manage used mercury switches under the hazardous waste rules. For more information, see Appendix D, "Complying With the Hazardous Waste Rules," on pages 105-110. Note that discarded mercury switches are not counted in determining generator status provided the switches are shipped off-site for recycling as a universal waste.

What must be done to be in compliance?

Listed below are the rules that must be followed depending upon how a facility manages its used mercury switches. Regardless of whether a facility follows the universal waste rule or the solid and hazardous waste rules, it must:

- Educate employees on proper handling and emergency procedures associated with the used switches.
- Contain all releases of waste and residues.
- Make a hazardous waste determination on used switches and manage them accordingly.

If used switches are managed under the universal waste rule, a facility must:

- Package the switches/pumps to prevent breakage and a release of contaminants.
- Label the used switches or the containers holding them with the words “Universal Waste–Mercury-Containing Equipment,” “Waste Mercury-Containing Equipment” or “Used Mercury-Containing Equipment” or other words that accurately identify the universal waste mercury-containing equipment (including wording specific to universal waste thermostats as required in the original rule).
- Have used switches transported to a universal waste collection center. Note that under the Universal Waste Rule, it is not required that used switches be manifested.
- Not accumulate and store used switches for longer than a one-year period.

If used switches are managed as a hazardous waste, the hazardous waste rules must be followed.



A Good Idea!

Recycling your mercury switches will help to ensure that the mercury contained in the switches will be handled in the most environmentally-responsible way possible.

Gasoline, diesel fuel, fuel filters, as well as used wipes and sorbents that are contaminated with gasoline or diesel may be subject to IDEM requirements.

What must be done to be in compliance?

Listed below are the management responsibilities that must be followed when managing fuel and fuel filters:

● Fuel

Manage waste fuel in one of the following manners:

- Reuse the fuel if it is not contaminated.
- Send it to a re-refiner or fuel blender.
- Make a hazardous waste determination and manage accordingly.

● Fuel Filters

Manage waste fuel filters in one of the following manners:

- Make a hazardous waste determination on fuel filters that contain gasoline.
- Drain the residual fuel from the filter, collecting any liquid for reclamation or reuse.



Fuel Filter (Photo by Joe Exl, IDNR)

This page was intentionally left blank.

Hull paints can contain heavy metals and other toxins. Scraping and sanding the paint can produce hazardous wastes. Even though the paint wastes may not be hazardous waste according to the Resource Conservation and Recovery Act, they may still be hazardous to the environment. Paints that contain zinc or copper compounds can harm aquatic life. Paint scrapings and debris that are mixed with other wastes (during maintenance, storage, etc.) may result in a mixture that is a hazardous waste. Each facility is responsible for making a hazardous waste determination on its used paint waste. This determination can be based on analytical test results of the debris, or it may be based on the knowledge of the waste and how it was generated and managed.



To minimize the spread of the debris, dust and paint chips, try to do all work in a covered building (Source: Jay Tanski, New York Sea Grant).

For both hazardous and nonhazardous debris, trash, sanding dust and paint chips, cleanup of the area should be done immediately following any maintenance or repair activity. The work area should never be hosed down unless the area is diked and the water is collected for treatment or discharged to the local publicly owned treatment works provided that the treatment plant has agreed to this activity.

What must be done to be in compliance?

If a facility's hull debris is considered to be a hazardous waste, the facility must manage it according to the hazardous waste rules. Listed below are some of the proper management requirements for small and large quantity generators. The full listing of requirements can be found under 40 CFR 262. While conditionally exempt small quantity generators are not required to comply with 40 CFR 262, it is recommended that they follow the same management practices.

- Label all containers in accordance with the hazardous waste rules. Remember to clearly mark the words "HAZARDOUS WASTE," as well as the date the waste began to accumulate (or the date the container was completely filled if there is a satellite accumulation area on site), on the waste container.
- Keep storage containers closed to prevent spills.

- Conduct weekly inspections to ensure that the containers are in good condition. Look for leaks and for deterioration caused by corrosion or other factors. If a container leaks, put the hazardous waste or the leaking drum in another container.
- Keep monthly records of the amount of waste that is accumulated.
- Manifest drums of waste to a waste treatment, storage or disposal facility.
- Use only permitted waste transporters that have obtained a U.S. EPA identification number to transport drums of waste off site.

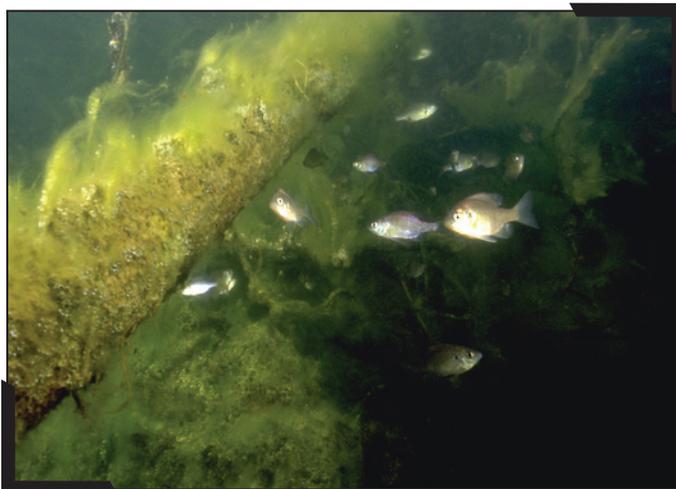
If it is determined that a facility's waste hull debris is not a hazardous waste, the facility must collect the paint chips and debris and place them in a nonleaking, covered dumpster.



A Good Idea!

To minimize the spread of the debris, dust and paint chips, try to do all work in a covered building. If a building is not available, limit work to days with little or no wind. Work over impervious surfaces and place plastic tarps under the work area for easy sweeping and disposal. If work must be done during windy days, construct a temporary structure of plastic sheeting. Try to vacuum the work area. Use or offer for use a dustless or vacuum sander when sanding.

Antifouling paints have been used on marine craft to kill organisms that attempt to attach to the painted surface. The paints contain copper, copper compounds, or tributyl tin compounds. By design, antifouling paints are toxic to marine life. These metals can be adsorbed by fish. Tributyl tin in levels as low as a few parts per trillion has been shown to cause abnormal development in shellfish. The toxins from the antifouling paints can enter into the environment from spillage, sanding, sand blasting or scraping. Paint chips left on the ground can migrate to the water via storm water run-off. The toxins can be passed up the food chain in increasing concentration levels through a process known as bioaccumulation (e.g., mussels uptake toxins during feeding; mussels are eaten by fish; fish are eaten by humans).



Antifouling paints are toxic to marine life (Photo by Tom Leaird).

What must be done to be in compliance?

- Do not use tributyl tin-containing paints on vessels of less than 25 meters (82 feet) in length; however, vessels with aluminum hulls which corrode from the cuprous oxide antifouling coatings are allowed to use tributyl tin-containing paints (see Organotin Antifouling Paint Control Act in Title 33, Chapter 37, Section 2401 of the United States Code).



A Good Idea!

Prohibit in-water bottom cleaning, hull scraping or any other process that occurs underwater that could remove antifouling paint. Use less toxic antifouling paints such as Teflon, silicone, polyurethane and wax that have limited negative impacts on the environment.

- Make a hazardous waste determination on any waste material or debris to determine whether the waste is hazardous under the Resource Conservation and Recovery Act. If the waste is found to be a hazardous waste, follow the same recommendations in the “Scraping & Sanding” section on pages 147-148.

This page was intentionally left blank.

The regulations a facility must follow when managing and disposing of solvents depends on the type(s) of solvent and precleaner(s) it is using. Listed below are the types of solvents potentially used in boat repair and maintenance and an overview of the regulations associated with each.

Water (Aqueous) Based Solvents

Aqueous-based solvents are generally less toxic alternatives to petroleum-based solvents. Unlike petroleum-based solvents, they are generally safer and have less hazards or adverse impacts associated with them. The detergent used for aqueous parts washing may be an acid, alkaline or a citrus-based solution. Some aqueous systems use microbes to eat the oil and grease that accumulate in the cleaning system. Aqueous parts washers may be in the form of a heated parts washing sink, an immersion tank, or a high-temperature spray cabinet. A high temperature spray cabinet is similar to a large dishwasher in that it combines heat, soap and spraying action to clean dirty parts. This type of unit is available in various sizes, with the larger units having ample capacity for cleaning large parts.

If a facility is considering switching to an aqueous-based cleaner, keep in mind that some aqueous cleaners will cause the parts to rust, requiring that the parts be treated after they are cleaned. Also keep in mind that used aqueous-based solvents may be a toxic hazardous waste if they are contaminated to the extent that they exhibit hazardous waste characteristics or are contaminated with a listed hazardous waste. Potential contaminants include oil and grease, lead, chromium, cadmium, and any precleaners used by the facility.

Depending upon the type and level of contamination, a facility's used aqueous-based solvent may be unacceptable for discharge to the local publicly owned treatment works (POTW) or may be a hazardous waste. If a facility wishes to discharge its aqueous cleaning solution, the facility should first contact its local POTW for permission. At no time should aqueous cleaners be discharged to the environment or a storm water sewer drain.



Petroleum-Based Parts Washer (Photo by Joe Exl, IDNR)

What must be done to be In compliance?

Listed below are the requirements that a facility must follow when managing and disposing of aqueous-based solvents:

- Make a hazardous waste determination and manage used aqueous solutions accordingly. For additional information on listed and characteristic hazardous wastes and the method to be used for making a waste determination, see Appendix D, “Complying With the Hazardous Waste Rules” on pages 105-110.
- Do not discharge used aqueous solution unless it is connected to a POTW or a holding tank or unless the facility has a National Pollutant Discharge Elimination System (NPDES) permit. If a facility is discharging to a POTW, the facility must ensure that the discharge meets the effluent limits set by the POTW.



A Good Idea!

Purchasing an aqueous parts washer with a skimmer and a timer will provide the facility with several benefits. First, the timer will allow it to automatically turn the washer’s heater unit on and off at certain times each day. Turning the heat off at the end of each day not only saves energy, but also allows the aqueous solvent to cool and the oil and grease to separate. The timer can then schedule the skimmer to remove the oil and grease that has risen to the top of the solvent. Frequent skimming of these contaminants will keep the solvent at its peak operating efficiency. Finally, the timer can be set to automatically turn the heater unit back on so that the solvent is ready to use at the beginning of each work day.

Petroleum-Based Solvents (e.g., mineral spirits)

New/virgin petroleum-based solvents are classified according to their flash point. The term “flash point” refers to the temperature at which a material could ignite if exposed to a spark. Materials with a low flash point (100°-140° F) will ignite more easily than materials with a higher flash point (140°-200° F.)

Petroleum-based solvents with a flash point from 100-140° F are also referred to as “low-flash solvents.” This type of solvent will be an ignitable hazardous waste and, possibly, a toxic hazardous waste when disposed.

Petroleum-based solvents with a flash point from 140-200° F are also referred to as “high-flash solvents.” Used high-flash solvent is not considered to be an ignitable hazardous waste unless it is contaminated and its flash point drops below 140° F. Be aware that many high-flash solvents have a flash point that is only slightly above the 140° F threshold for this group of solvents. If the facility uses precleaners that contain flammable materials, the used high-flash solvent may become a low-flash solvent (i.e., an ignitable hazardous waste) that is subject to more stringent regulations. In addition to potentially being an ignitable hazardous waste, a used high-flash solvent may also be a toxic hazardous waste if contaminated to the extent that it exhibits hazardous waste characteristics. If a facility’s pre-cleaners contain any chemicals that are on any of the hazardous waste lists, the used solvent may automatically be a hazardous waste.

Chlorinated Solvents

Using chlorinated solvents can lead to significant compliance work for a facility. Chlorinated solvents include the following:

- Chlorobenzene (monochlorobenzene or benzene chloride);
- Trichloroethylene (trichloroethane, ethinyl trichloride);
- Chlorinated fluorocarbons;
- Methylene chloride (dichloromethane, methylene dichloride, methylene bichloride);
- Tetrachloroethylene (perchloroethylene, ethylene tetrachloride, tetrachloroethene); and
- 1,1,1-trichloroethane (methyl chloroform, chloroethene).

Check the product label or the material safety data sheets for these chemicals. If a facility is using any of them, IDEM air regulations will apply. Hazardous waste regulations may also apply.

Some facilities use supplemental cleaning products to pretreat carbon deposits and other heavy soils. These cleaning products typically contain ignitable and/or chlorinated solvents such as methanol, propane, xylene, methylene chloride, trichloroethane and/or tetrachloroethylene. The use of these products may cause used solvent to be a hazardous waste due to toxicity, as well

as ignitability. In addition to precleaners, used solvent may be contaminated with lead and/or chromium, which are frequently used as coatings on metal parts. A thin layer of these coatings may wash off when the parts are cleaned, leaving heavy metals in the used solvent.

Under IDEM's air regulations, all facilities that use petroleum-based solvents in an immersion cleaning machine (solvent sink) or in a remote reservoir cleaning machine (part sprayer), must follow specific work practices to limit the amount of volatile organic compounds (VOCs) entering the air. These work practices are listed in the "What Must Be Done To Be In Compliance?" section on page 155.

Under IDEM's hazardous waste rules, used petroleum-based solvent with a flash point below 140° F is a hazardous waste due to the characteristic of ignitability. The term "flash point" refers to the temperature at which a material could ignite if exposed to a spark. Used petroleum-based solvents with a flash point above 140° F are not regulated as a hazardous waste due to ignitability, but may be a hazardous waste due to toxicity depending upon the level and type of contamination. Note that if a facility is classified as a conditionally-exempt small quantity generator (CESQG), disposing of more than 30 gallons of hazardous waste in any one calendar month will change a facility's hazardous waste generator status classification from CESQG to small quantity generator (SQG). If a facility's used petroleum-based solvent is determined to be a hazardous waste, it may easily move into the SQG classification when the parts washer is changed out. Parts washers typically contain between 19 and 27 gallons of used solvent, making the amount of hazardous waste very near the 220 pounds per month threshold for SQGs.

Many vendors have begun continued use programs. Under such a program, the vendors directly reuse their customers' solvents without first treating or recycling the solvents. Under a continued use program, the facility using the solvent does not generate a waste and, therefore, does not need to count the solvent toward their generator status or make a hazardous waste determination on the solvent.

What must be done to be in compliance?

Listed below are the requirements that must be followed when managing and disposing of petroleum based solvents. If a facility uses petroleum-based solvents in immersion cleaning machines (solvent sinks) or in a remote reservoir cleaning machine (part sprayer), it must:

- Keep the solvent tank covered when not in use to prevent evaporation.
- Place a drain shelf in the basin of the parts washer. This shelf allows solvent to drain back into the solvent tank.
- Drain all parts for at least 15 seconds or until the part is no longer dripping.
- Store used solvent to be disposed in tightly covered or closed containers. Users of solvents with a vapor pressure at or below two millimeters of mercury (2.0 mm Hg) must also keep a record of each purchase, including the following information:
 - Name and address of the solvent supplier;
 - Date of purchase;
 - The type of solvent;
 - Volume of each unit;
 - Total volume of the solvent; and
 - Vapor pressure of the solvent.
- Make a hazardous waste determination on used petroleum-based solvent and manage it accordingly.



A Good Idea!

It is a good idea to purchase or lease a solvent sink with a filter unit. See the next page for details.

A Good Idea!

Purchasing or leasing a solvent sink with a filter unit is a good idea. Some of the newer solvent sinks have filter units that extend the life of the solvent by filtering out contaminants. Dirty solvent passes through the filtering unit where contaminants are removed, and clean solvent is returned to the reservoir for reuse.

The type and location of the filters on the solvent sink vary depending upon the type of filtration system used. Some of the more commonly employed filtration systems are:

- Side-mounted disposable fabric filter units, which remove primarily particulates.
- Cyclonic filter units that use centrifugal force “cyclonic action” to remove solids. The solvent passes through a filtering unit where a spinning action takes place, causing the solids to settle out and allowing the clean solvent to be reused.
- Clay-containing filter units that are placed in the solvent reservoir or in the wash basin to remove primarily oil and grease.

Remember that a hazardous waste determination must be performed on the used filters prior to disposal.

SORBENTS

(includes spill cleanup materials & waste)

Sorbents (absorbent material such as pags, pillows and socks) are not hazardous unless they come into contact with hazardous materials or hazardous wastes. A facility’s used sorbents and spill waste must be managed in one of the ways listed below. The particular requirements that must be followed depends on the type and extent of contamination, the quantity of contaminated sorbents generated per month, and whether the sorbents are recycled or disposed. Note that the term “spill waste” includes sorbents as well as any contaminated soil, residue, debris, and articles from the cleanup of a spill or release of petroleum-contaminated materials. The term “petroleum-contaminated materials” includes spill waste that contains virgin or used petroleum such as: gasoline, diesel fuel, hydraulic fuel, crude or refined oils that do not contain polychlorinated biphenyls (PCBs), kerosene, and heating oils.



Sorbent on a Spill (Photo by Joe Exl, IDNR)

Recycling Petroleum-Contaminated Sorbents (and/or Spill Waste) Under the Used Oil Rule

If a facility’s sorbents are contaminated only with used oil, the sorbents may be disposed by burning for energy recovery under the used oil rule. In order to comply with the used oil rule, a facility must properly manage its oil-contaminated sorbents (i.e., don’t mix other wastes with these sorbents), and it must either recycle sorbents or send them for disposal at a permitted facility that burns them for energy recovery. See “Used Oil Management” on pages 129-132 for additional information on the used oil rule.

Disposing of Contaminated Sorbents (and/or Spill Waste)

If a facility cannot manage its sorbents and spill waste under the used oil rule (e.g., because of contamination with a waste other than used oil), it must make a hazardous waste determination and manage them accordingly. Sorbents that exhibit hazardous waste characteristics or are contaminated with a listed hazardous waste must be managed as a hazardous waste. Refer to Appendix D, “Complying with the Hazardous Waste Rules,” on pages 105-110 for additional information on characteristic and listed hazardous wastes.

SORBENTS

(includes spill cleanup materials & waste)

Disposing of Sorbents and/or Spill Waste as a Solid Waste (i.e., with regular trash)

If used sorbents are determined not to be a hazardous waste, and they do not drip or accumulate free liquids (such as in the bottom of their storage container), a facility may dispose of them with its regular trash. Note that materials containing free liquids are prohibited from landfills. Also note that IDEM's air regulations prohibit air drying contaminated sorbents prior to disposal.

What must be done to be in compliance?

Listed below are the requirements that must be followed when managing and disposing of sorbents:

- If a facility manages its petroleum-contaminated sorbents and spill waste under the used oil rule, it must follow the requirements of this rule.
- If a facility cannot manage its used sorbents and/or spill waste under the used oil rule due to contamination with a waste other than used oil, it must make a hazardous waste determination on its used sorbents.
- If they are a hazardous waste, the facility must manage them accordingly.
- If a facility's used sorbents or spill waste are not a hazardous waste, it must ensure that the material does not drip, contain free liquids, or result in the accumulation of free liquids (such as in the bottom of their storage container) prior to disposing of them with the regular trash.

REMEMBER: Regardless of how a facility manages its contaminated sorbents and/or spill waste, it must not air dry contaminated sorbents to remove ignitable or toxic characteristics prior to disposal!



A Good Idea!

Purchase biomass-derived sorbent material. Sorbents made from plant cellulose, such as cotton and wood-fibers, are very effective in absorbing liquids. Biomass-derived sorbents have an absorbency ratio of 4:1 when compared to most alternatives. The absorbency ratio is five times greater than clay.
