

Environmental Best Management Practices  
for  
Marinas and Boat Yards

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## **Introduction**

Like all other businesses, marina and boat yard operators must comply with environmental regulations. Unlike other businesses, marinas and boat yards have a special relationship with our most precious natural resources: lakes, rivers and the sea. The use of these waters by marina users and operators carries with it a special responsibility to meet the highest environmental standards. This manual provides guidance and best management practices for the marina and boat yard industry to meet and exceed the requirements of good environmental stewardship.

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5. Case Studies of Clean Marinas  
from: *Clean Marinas Clear Value* EPA841-R-96-003,  
<http://www.epa.gov/owow/nps/marinas/>
  - Closed Hull Blasting
  - Dustless Sanding
  - Used Oil Recycling
  - Customer Environmental Contract
  - Clean Marina Pays
7. Lighting and Boating Safety, Sensible Shoreland Lighting  
<http://www.epa.gov/owow/nps/marinas/>

## Best Management Practices for Operations

The following environmental best management practices for marinas and boat yards are described for common boat yard activities. The types of marina and boat yard operations that they apply to include:

- Recreational boat docking facilities
- Commercial boat docking facilities
- Boat storage facilities
- Boat building and maintenance facilities

These best management practices are meant to guide the marina or boat yard operator in meeting or exceeding their regulatory responsibilities, but are not a substitute for existing regulations. Any questions about specific regulations and compliance responsibilities should be directed to your local environmental regulatory agency.

**Storm Water Runoff** - State and federal storm water discharge programs control pollutant discharges to lakes and streams caused by run-off from businesses.

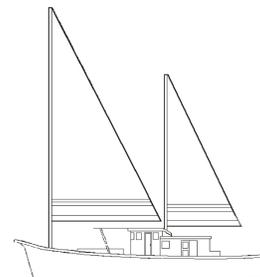
- Marina and boat yard operators that have maintenance or boat washing operations are required to submit a storm water permit, and develop a storm water pollution prevention plan.
- Storm water from roofs, surface lots, and other impervious surfaces, should be directed to areas where water can infiltrate into the soil. Direct flows of run off into surface waters should be avoided.

**Waste Water Discharge** - Most non-domestic waste water generated by marina and boat yard operators are considered industrial waste water.

- Non-domestic waste water, industrial waste water, or other waste water should not be discharged into any sewer designated to carry storm water or allowed to flow directly into surface waters.
- Any industrial waste water, or other liquids that are discharged to sanitary sewers require prior approval from the sewerage treatment plant operator.

**Material Storage and Handling** - Many chemicals that are commonly used by boat yards can pollute the environment. Care should be taken in handling these products to avoid spills.

- Any underground storage tanks should be removed. All aboveground tanks should have adequate spill containment dikes, and shed roofs to prevent contamination of rainwater.
- Liquid wastes should not be discharged into a storm sewer, sanitary sewer or onto the open ground or surface waters.
- All facilities should maintain a supply of petroleum absorbent material and "spill-dry" in a readily accessible location. In addition, all facilities should have a written spill prevention and contingency plan to deal with petroleum product spills.



**Fueling Operations** - It is the responsibility of the facility operator to properly supervise the fueling operations, and in most cases it is preferable that a facility employee actually perform the fueling operation.

- Fuel nozzles should have automatic back pressure shut-offs and should not have a holding clip to keep the nozzle open (i.e., the nozzle should only be held open by hand).
- There should be petroleum absorbent pads in the immediate vicinity of the dispenser, readily accessible in the event of a small spill. If fuel spills into the water or onto the ground, the person fueling the boat should use the absorbent pads to remove the fuel from the water surface or from the ground.
- Mobile fueling operations at any facility should be the joint responsibility of the marine facility, the tank truck operator, and the vessel owner. Extreme caution should be taken to prevent spills from occurring.

**Spills** - Material spills are inevitable, and any spills should be cleaned up promptly when they are detected.

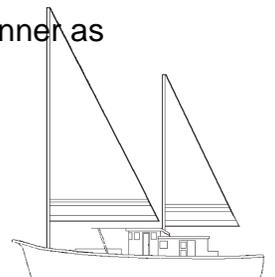
- Avoid using detergents to clean-up after spills, as byproducts can pollute surface waters. The use of absorbents and other mechanical approaches are preferred.
- Grease, oil, diesel fuel and gasoline spilled on land should be collected and put into the appropriate waste container. Uncollectible residues may be absorbed with "spill-dry" or a similar product and should be disposed of by a waste transporter permitted to handle such wastes.
- For spills on water a floating containment boom large enough to enclose the area of surface water where a spill may reasonably occur should be kept at hand.
- Staff at fueling facilities should have proper training in the deployment of fuel spill equipment and materials. Each facility must have a spill contingency plan that describes what action to take in the event of a spill.

**Engine Maintenance and Repair** - These operations can be a cause of easily preventable spills.

- When ever possible conduct maintenance and repair operations over land, avoid repairs conducted over water.
- Use suction-style oil pumps to drain crankcase oil, and use absorbent pads to remove oil from bilges.
- Engine test tanks should never be drained to surface waters or septic systems.

**Engine Parts Washing** - Washing engine parts with solvent may not be done over open ground.

- Parts washing should be done in a container or parts washer with a lid to prevent evaporation. The parts should be rinsed or air dried over the parts cleaning container.
- Dirty parts washing fluid should be recycled or disposed of by a licensed waste hauler.
- Water soluble engine washing fluids should be treated in the same manner as other industrial waste waters.



**Engine and Parts Storage** - Engines and engine parts should be stored on an impervious surface such as sealed asphalt or cement, and covered to avoid contact with storm water. Care should be taken to prevent oil and grease from leaking onto the open ground.

**Bottom Paint Removal** - Bottom paints may contain metal compounds that are toxic to marine life and the removal of these paints from the bottom of a boat produces a waste product which can harm the environment.

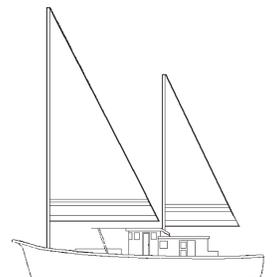
- Discharges of bottom paint residues to surface waters or land is prohibited.
- Bottom paint removal should be conducted over an impermeable surface such as sealed asphalt or cement (not over open ground) with a retaining berm so that the waste water can be contained.
- Removing bottom paint by high pressure water or with a low pressure hose and a scrubber or scraper produces an "industrial waste water". This waste water may be recycled or disposed of, but it may not be discharged to surface waters or storm sewers, and paint solids should be separated from the waste water and disposed of properly.

Removing bottom paint by wet or dry sanding (either by hand or with power tools) produces a sanding dust containing potentially hazardous metals (principally copper).

- Sanding should be done over an impervious surface such as asphalt, cement, or a material such as canvas, plastic, etc. (not over open ground) and there should be a berm or retaining wall surrounding the area so that the sanding dust can be swept or vacuumed and disposed of properly.
- Whenever possible vacuum sanding systems should be used to collect sanding dust as it is created.
- Dust should not be allowed to become wind-borne or otherwise leave the containment area.

**Sanding Hulls or Topsides** - The sanding dust generated by this activity should be collected and disposed of properly and may not be intentionally discharged into a storm sewer or onto surface waters.

- Where sanding is conducted on land, reasonable precautions should include laying drop cloths beneath the area being sanded and collecting the debris for proper disposal.
- Where sanding is conducted in the water, reasonable precautions should include covering the water near the boat with floating traps or surrounding the immediate area with floating booms and removing the debris with a skimmer.
- Whenever possible vacuum sanding systems should be used to collect sanding dust as it is created.



**Spray Painting** - Wastes related to spray painting are often a major source of environmental pollution. Several steps can be taken to reduce waste and emissions from painting operations.

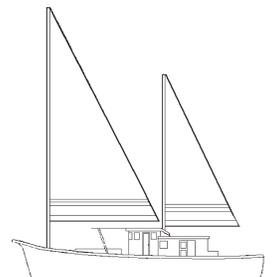
- Carefully control inventory so that waste paint and solvents are kept to a minimum; store waste paint, solvents, and rags in covered containers to prevent evaporation to the atmosphere.
- Direct solvent from cleaning spray equipment into containers to prevent evaporation to the atmosphere.
- Whenever possible use solvents with low volatility and coatings with low VOC content; use high transfer efficiency coating techniques such as brushing and rolling to reduce overspray and solvent emissions.
- Spray painting on land should occur over an impermeable surface and in such a manner that overspray does not fall on open ground or surface waters.

**Pressure & Steam Cleaning** - The use of pressure cleaning equipment for the initial rinse-off of a vessel hauled from the water can generate industrial waste water.

- Pressure cleaning should be restricted to an area with an impermeable surface (such as sealed asphalt or sealed concrete) and with a berm or pitch which allows the waste water to be contained and collected.
- Waste water from pressure cleaning may not be discharged to septic tank or surface waters. Waste water may be disposed by sanitary sewer disposal.
- Tanks used to collect waste water and remove solids are considered process tanks and paint solids classified as hazardous must be separated and removed by a licensed hauler.

Steam cleaning should be done on an impervious area designed to collect and contain the cleaning effluent, discharges to surface waters are prohibited.

- If detergents or solvents are not used, a properly sized grease trap/oil and water separator connected to a sanitary sewer and properly maintained, should provide adequate treatment to allow the effluent to meet sewer standards.
- If detergents or solvents are used, the oil and grease are emulsified and a grease trap will not function properly. In these cases, treatment or recycling systems should be used. This water should be considered industrial waste water and discharge to septic systems or storm sewers is prohibited. If sanitary sewers are not available, waste water should be hauled by licensed hauler.



## **Best Management Practices for Materials**

### **Anti-Freeze**

Anti-freeze, when drained from an engine, should be stored in a clearly marked container on an impervious surface and under cover. Reuse and recycling of antifreeze should be done whenever possible (e.g. as freeze protection for bilges or plumbing). Antifreeze cannot be disposed of down a storm sewer or in a septic system. Disposal to a sanitary sewer must be allowed by the treatment plant, otherwise it should be removed from the site by a waste transporter permitted to handle this waste.

### **Used Lead-Acid Batteries**

Store on an impervious surface, under cover, protected from freezing, to be collected by an approved recycler.

### **New Oil**

Including new engine oil, transmission fluid, hydraulic oil, and gear oil. These petroleum products should be kept in non-leaking containers on an impermeable surface, away from floor drains. Cover in a manner that will prevent storm water from contacting the container. Leaking containers should be emptied promptly upon detection, either by transferring the product to a non-leaking container or by disposing of it in the "waste oil" container.

### **Waste Oil**

Waste engine oil, transmission fluid, hydraulic oil, and gear oil should be stored in a clearly marked non-leaking container on an impermeable surface, and covered in a manner that will prevent storm water from contacting the container. Oil spills should be prevented from leaving the area by means of a berm or retaining structure. Waste oil should be removed from the site by a permitted waste oil transporter, or used in a waste oil heater on-site.

### **Oil Filters**

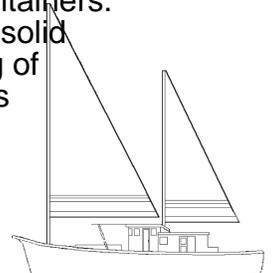
Oil filters should be crushed or punctured and hot-drained by placing the filter in a funnel over an appropriate waste collection container to allow the excess petroleum product to drain into the container. Drained filters should be collected and recycled when possible. Only filters that have been crushed or hot-drained to remove all excess oil may be disposed of as solid waste.

### **Mercury Lamps and Switches**

Spent fluorescent bulbs, other mercury lamps and mercury switches are hazardous waste. Spent lamps should be collected and stored safe from breakage until a sufficient quantity has accumulated for recycling, or disposal as hazardous waste.

### **Fiber Reinforced Plastic**

Use of epoxy and polyester resins for repair or construction of boat hulls can generate significant amounts of waste. Common solvents such as acetone or methylene chloride evaporate easily and should be kept in covered containers. Small amounts of unused resins may be catalyzed prior to disposal as solid waste. However, catalyzation is not an acceptable method of disposing of outdated or unneeded resin stores. These materials must be treated as hazardous waste and disposed of by a licensed waste hauler.



### **Glue and Adhesives**

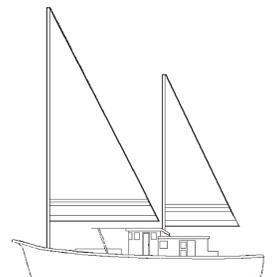
Residual amounts of glues and adhesives remaining in empty caulking tubes may be disposed of as solid waste. All other glue and adhesive related wastes must undergo a determination for hazardous waste characteristics. Non-hazardous glues and adhesives in liquid form cannot be disposed of as solid waste, and should be used for their originally intended purpose.

### **Paints, Waste Diesel, Kerosene and Mineral Spirits**

These products should be stored in non-leaking containers on an impermeable surface, and covered to prevent storm water from contacting the container. Each container should be clearly labeled with its contents. Storage locations should conform to local Fire Codes. The disposal of any waste products from these materials should be by performed by a licensed waste transporter. These waste products should not be allowed to evaporate; poured on the ground; disposed of in storm sewers, septic systems or POTW's; or discharged to surface waters.

### **Waste Gasoline**

Waste gasoline should be stored in a non-leaking container, on an impermeable surface and covered to prevent storm water from contacting the container. The container should be clearly labeled "waste gasoline" and the storage location should conform to local Fire Codes. Whenever possible, waste gasoline should be filtered and used as a fuel. Waste gasoline should not be allowed to evaporate; poured on the ground; disposed of in storm sewers, septic systems or sanitary sewers; or discharged to surface waters. Waste gasoline should be removed from the site by a licensed waste transporter.



## Environmental Best Management Practices Self Assessment

In this section a series of short questions are provided as a guide to marinas and boat yards. Their purpose is to help determine if there is a need to improve facility environmental management. The questions are not intended to be comprehensive with respect to the full range of regulated activity, but provides a good starting point for self-evaluation. Any responses that match the answers marked with an asterisk (\*) are candidates for seeking additional assistance or information.

### Tanks

Are there any unused bulk storage tanks such as for fuels or chemicals, either above ground or below ground, and

Yes \_\_\_\_\_\*      No \_\_\_\_\_      Don't Know \_\_\_\_\_\*

If yes, have they been properly cleaned, filled, or removed?

Yes \_\_\_\_\_      No \_\_\_\_\_\*

Are fuel storage tanks in use been properly registered?

Yes \_\_\_\_\_      No \_\_\_\_\_\*      Don't Know \_\_\_\_\_\*

### Wastewater

If there are wastewater discharges to the municipal wastewater treatment facility, are the discharges in compliance with all pre-treatment requirements or discharge limits?

Yes \_\_\_\_\_      No \_\_\_\_\_\*      Don't Know \_\_\_\_\_\*

If there is any direct discharge of wastewater into groundwater or to the surface such as a stream, lake or drainage ditch, does your business have a permit to do so?

Yes \_\_\_\_\_      No \_\_\_\_\_\*

Does your business have floor drains that go directly to the sewer?

Yes \_\_\_\_\_\*      No \_\_\_\_\_      Don't Know \_\_\_\_\_\*

### Solid Waste

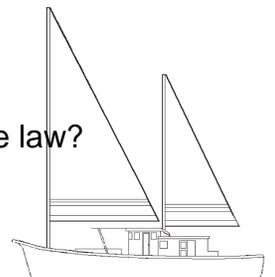
Does your business dispose of any materials on the property?

Yes \_\_\_\_\_\*      No \_\_\_\_\_

Are wastes generally separated for recycling and disposal?

Yes \_\_\_\_\_      No \_\_\_\_\_\*      Don't Know \_\_\_\_\_\*

Does your business recycle materials as required by local ordinance and state law?



Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Does your business burn solid waste at its site or facility?

Yes \_\_\_\_\_ \* No \_\_\_\_\_

**Hazardous Waste**

Has your business conducted hazardous determinations for all potentially hazardous waste streams?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Has an inventory been conducted and maintained for all hazardous materials in use or produced on site?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Are regulated hazardous wastes generated from your business properly hauled and disposed, or treated by certified operators who meet state and federal requirements?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Are hazardous wastes properly segregated from other wastes, including other hazardous wastes and solid waste or non-hazardous liquid waste?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Are hazardous wastes properly stored, including appropriate fire and explosion isolation and ventilation for volatile materials?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Are all wastes properly dated and labeled?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Does your business have clearly defined procedures for preventing spills and leaks, and for dealing with any spill or leak that does occur?

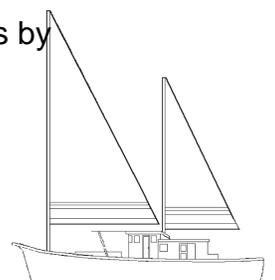
Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Does your business generate oil and other vehicle wastes that may not be considered hazardous waste?

Yes \_\_\_\_\_ \* No \_\_\_\_\_

Does your business know how much hazardous waste it generates and stores by month and by year?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*



Does that business know its generator status, and does your business know whether it has any reporting obligations to the Wisconsin Department of Natural Resources?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Does your business know whether it needs an EPA identification number?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Does your business maintain a complete file of Material Safety Data Sheets (MSDS) for all hazardous materials on site, and are the MSDS sheets available at a convenient location for employees?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Does your business maintain effective education and training programs on safety and chemicals hazards, including adequate follow up on enforcement of rules?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Do employees know proper procedures for handling and managing hazardous materials, including procedures for spill response and emergency cleanup ?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Are containers with hazardous materials labeled with proper warnings, and are containers kept closed or secured in proper storage facilities?

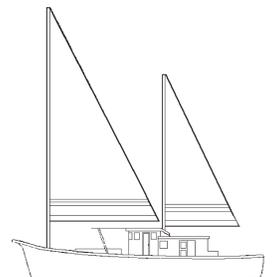
Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Does the storage of hazardous chemicals in your business comply with National Fire Protection and local ordinances?

Yes \_\_\_\_\_ No \_\_\_\_\_ \* Don't Know \_\_\_\_\_ \*

Are hazardous materials ordered on an as needed basis rather than stockpiling larger quantities?

Yes \_\_\_\_\_ No \_\_\_\_\_ \*



## Hazardous Waste Regulatory Primer

### Types of Wastes Which May Be Regulated

As a small business you must be aware of your responsibilities for proper disposal of your waste materials. This section provides background information to help you determine if disposal of your waste materials is regulated by state and/or federal agencies. Understanding and correctly interpreting waste regulations can be difficult and confusing. The following list specifies the types of waste which may be subject to federal and/or state regulations. Note that for regulatory purposes, these definitions may vary from state to state.

**Solid Waste:** Solid waste generally refers to any garbage, refuse, sludge, and other discarded or salvageable material, including solid, liquid, semisolid or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities. This does not include solids or dissolved materials in domestic sewage, dissolved or suspended solids in industrial waste water effluent, or other common water pollutants.

Note: Wastes that are "solid" in their physical state are not always considered "solid wastes" from a regulatory standpoint. If a waste conforms to the above definition and is not considered to be hazardous (i.e. is not listed by the EPA as hazardous or doesn't have hazardous characteristics, as detailed below), then it can be categorized as a solid waste.

Typical solid wastes include: paper; wood; yard debris; food wastes; plastics; leather; rubber and other combustibles; and noncombustible materials such as glass and rock.

**Hazardous Waste:** Hazardous waste is any solid waste (see above) which is defined as hazardous. A solid waste is defined as hazardous if it is either 1) listed as hazardous by the EPA or a state's regulatory agency; or 2) has hazardous characteristics.

1)The EPA-issued hazardous wastes lists include: wastes generated by non-specific sources (e.g. spent halogenated solvents); wastes generated by specific sources (e.g., distillation bottoms from recycling paint solvents); acutely hazardous commercial chemical products and manufacturing chemical intermediates which may be hazardous under certain conditions; and toxic commercial chemical and manufacturing chemical intermediates which may be hazardous in certain circumstances.

2)The criteria for determining whether a solid waste has hazardous characteristics include: ignitability (e.g. flash point less than 140° F); corrosivity (e.g. pH less than 2 or greater than 12.5); reactivity (e.g., reacts violently with water, normally unstable, generates toxic fumes, etc.); and toxicity (e.g. as determined by the "TCLP" laboratory test).

Typical hazardous wastes include: 1,1,1-Trichloroethane; toluene; xylene; methylene chloride; perchloroethylene; spent cyanide plating, cleaning and bath solutions; waste water treatment sludges.



Mixed/Contaminated Waste: Mixed/contaminated waste refers to (non-hazardous) solid waste which has been mixed with, or contaminated by, a hazardous waste or substance.

Note: If a solid waste is mixed with (or contaminated by) a "characteristic" hazardous waste it is considered hazardous only if the resulting mixture retains the hazardous characteristic. A mixture of a "listed" hazardous waste with a non-hazardous solid waste is generally considered hazardous unless certain specific criteria can be met.

Typical mixed/contaminated wastes include: used motor oil and chlorinated solvent, used engine coolant and gasoline, paint booth filters.

**Air Emissions:** Air emissions refer to the release or discharge of a pollutant into the ambient air either 1) by means of a stack, or 2) as a fugitive dust, mist or vapor as a result inherent to the manufacturing or formulating process.

Typical air emissions include: overspray and drying from painting or coating operations; evaporating solvents from parts cleaning/degreasing operations; perchloroethylene from dry cleaning operations.

**Wastewater Discharge:** Wastewater discharge refers to any direct discharge of a pollutant from a "point source" (i.e. an identifiable source such as a pipe, ditch, or outfall) to surface waters, ground waters, such as through septic systems, or to a publicly owned treatment plant (POTW).

Note: The term "pollutant" is very broadly defined and even includes heat from non-contact cooling water. Pollutants are generally characterized as either 1) "conventional," which includes such things as total suspended solids (TSS), biochemical oxygen demand (BOD), phosphorus, oil and grease, or 2) "toxic," which consists of various chemicals or chemical compounds which have toxic effects on human health, wildlife, fish or aquatic life.

Typical wastewater discharges include: wastewater from vehicle washing operations; wastewater from food processing; spent aqueous cleaning solutions; industrial process waste waters; and boat sewage discharge.

**Storm Water Discharge:** Storm water runoff refers to water from rainfall and snow melt that runs off buildings, sidewalks, etc., and flows over the ground surface returning to a water body, potentially collecting pollutants from air and/or land along the way. As the runoff "leaves" a particular site it is considered (for regulatory purposes) "Storm water discharge." Storm water discharge is usually considered a "point source" pollution as it actually originates from a particular site, or a discreet point source. Storm water discharges are sometimes referred to collectively as "urban runoff" which is generally considered "nonpoint" source pollution.

Typical Storm water runoff /discharge pollutants include: oil and grease from vehicle maintenance; sediments from construction sites; pesticides from grounds keeping activities; detergents from vehicle washing; and hazardous liquids from leaking above-ground storage tanks.



**Underground Storage Tanks (USTs):** An underground tank is generally defined as a tank and any associated pipes having 10 percent of its volume or more beneath the surface of the ground. USTs containing petroleum products or hazardous substances are generally subject to regulation.

### **Determining Your Generator Status**

Hazardous waste is a by-product of many large and small businesses. From a public perspective, it is most often associated with medium- to large-size manufacturers, but in reality many small, non-manufacturing businesses produce some hazardous waste. From a regulatory view, the business is responsible for determining if it is generating any hazardous waste. Generators fall into one of three categories: very small quantity generator, small quantity generator, and large quantity generator (or VSQG, SQG, and LQG, respectively). The generator status is determined by three factors:

1. amount of hazardous waste generated per calendar month
2. amount of hazardous waste accumulated on site at any one time
3. whether the waste is hazardous or acute hazardous

**Very Small Quantity Generator** - A VSQG (also know Conditionally Exempt Small Quantity Generator or CESQG) has a monthly generation limit of 100 kg (220 pounds) or less of hazardous waste, and 1 kg (2.2 pounds) or less of acute hazardous waste (consisting of EPA listed pesticides). A VSQG cannot accumulate more than 1,000 kg (2,205 pounds) of hazardous waste, or 1 kg (2.2 pounds) of acute hazardous waste.

A VSQG must determine if its waste is hazardous and comply with generation and storage limits. It must properly manage or dispose of hazardous waste at an approved hazardous waste facility. When the wastes are transported, they must be properly marked and labeled according to U.S. Department of Transportation rules, and a licensed transporter is to be used. If the transporter requires a manifest, then the VSQG must get an EPA identification number.

**Small Quantity Generator** - A SQG has monthly generation limits of less than a 1,000 kg (2,205 pounds), and an accumulation limit of 6,000 kg, or 13,230 pounds. The maximum accumulation cannot be stored more than 180 days.

The regulatory burden is greater for a SQG. In this case an EPA identification number is required, proper storage regulations apply, record keeping and reporting requirements apply, an annual report must be given to the regulating agency, and emergency procedures must be established for leaks, spills, or fires involving hazardous waste.

**Large Quantity Generator** - A LQG generates over 1,000 kg (2,205 pounds) per month and may not store hazardous waste more than 90 days. With acute hazardous waste, any generator exceeding the VSQG limit of 1 kg (or 100 kg spill) becomes a LQG.

