

# RCRA: Hazardous Waste Regulations

## ***Understanding Hazardous Waste Regulations***

Printers usually generate hazardous waste from their operations. Almost all print shops generate waste or used shop towels, and most printers generate used solvent-based cleaning fluids. The following questions are provided to help you find out where your company is on the road to compliance:

Has your facility performed a hazardous waste determination on all chemical and industrial wastes (e.g., solids, liquids, gases, or mixtures) generated and identified those which are hazardous wastes? Based on the pounds of hazardous waste generated, what is your facility's generator classification?

- Small quantity generator
- Kansas generator
- EPA generator

Are appropriate (as determined by your hazardous waste generator status) records kept of required training and hazardous waste inspections? The RCRA appendix contains sample training and inspection logs, and storage placards for your use.

Are copies of hazardous waste shipping manifests and copies of land ban forms for your wastes kept for at least three years?

Do workers keep hazardous waste containers closed, except when adding or removing waste?

Are hazardous waste storage drums labeled with the words "hazardous waste"?

Would your shop towels, wipes, etc. pass a "paint filter test" for free liquids?

Does your facility use a laundry service that collects, launders, and returns towels to you?

Use of a commercial laundry service to provide reusable shop towels means those rags do not have to be not counted towards your monthly hazardous waste generator totals. However, they must be managed appropriately, such as:

- Rags contaminated with characteristic or listed solvents cannot be air dried before put in containers.
- Rags contaminated with above solvents must be kept in vapor-tight containers, and should be marked: "Used Rags for Recycle." (See more on shop towel management in this section.)

Has your facility evaluated the industrial laundry you use to determine its compliance status with air pollution controls, and wastewater treatment and discharge requirements? You have permanent (cradle to grave) responsibility for all wastes generated at your facility. If a transporter, treatment, or other vendor mishandles the waste, it is still your responsibility.

If your facility uses disposable shop towels or other disposal cleaning pads that are being thrown in the regular trash, do you know if the solvent or inks used with them are considered hazardous?

Are solvent- and ink-contaminated shop towels, if not commercially laundered, determined to be hazardous waste? And if so, are they collected in containers and managed as hazardous waste?

Are containers used for collecting solvent/ink-contaminated shop towels and other solvent-contaminated cleaning materials kept closed, except when adding or removing materials?

Are absorbents and spill cleanup materials, such as "oil dry," absorbent "socks," and "pigs" managed as hazardous wastes, if they are contaminated with hazardous materials?

**NOTE:** *If you aren't sure about answers to some of the questions above, you should go through this section of the manual carefully. Shop towels, spent fixer, cleaning solvents, and ink wastes can easily be mismanaged and cause compliance problems for your shop.*

The list below contains most types of hazardous wastes from print shops.

***RCRA Hazardous Wastes from Print Shops:***

Silver-contaminated spent fixer	CWA, RCRA
used shop towels	RCRA, CWA
silver chemical recovery cartridges	RCRA;
used film	RCRA; usually nonhazardous
photographic reducers or intensifiers	RCRA
used or damaged plates	RCRA; usually nonhazardous
outdated chemicals	RCRA, CWA
glue/adhesives	CAAA, RCRA
aerosol products	CAAA, RCRA
glass/equipment cleaners	CAAA, RCRA
plate finisher	CWA, RCRA
solvent washout from plates	RCRA
waste photopolymer resins	RCRA; usually nonhazardous
unexposed photopolymer plates	RCRA; usually nonhazardous
exposed photopolymer plates	RCRA; usually nonhazardous
digital plates (flexo)	RCRA; usually nonhazardous
solvent-based, plate-making waste	RCRA
outdated chemicals	RCRA, CWA
chrome-plating solution	CWA, RCRA
acid solutions	CWA, RCRA
basic solutions	CWA, RCRA
solvent-based inks	CAAA, RCRA
water-based inks	CWA, RCRA
UV ink	RCRA
fountain solutions	CAAA, CWA, RCRA
adhesive remover	CAAA, RCRA
solvent ink removers	CAAA, RCRA
press-cleaning solvents	CAAA, RCRA, CWA
parts-washer solvent	CAAA, RCRA
press-side cleaners	CAAA, RCRA
ink thinners	CAAA, RCRA
anti-skinning materials	CAAA, RCRA

## ***Hazardous Waste Determination***

The first thing you must do, and are *required* to do by hazardous waste regulations, is determine which of your wastes are hazardous, and document how you made that determination. This information should be kept with your inventory list of wastes from your facility in your environmental folder.

How do you make this determination? Printers have several documents to use in making a hazardous waste determination: the product material safety data sheet (MSDS), lab tests by KDHE-approved labs, and/or by using process knowledge.

### ***MSDS***

The MSDS for a material gives information about that material's physical characteristics, and specific information about the chemicals and their percentages present in that product. Most MSDSs also indicate if the material must be reported under certain regulations as a "reportable" chemical.

### ***Process Knowledge***

Process knowledge can also be used to make a hazardous waste determination, although KDHE can ask you to verify that determination with testing. A good rule of thumb when using process knowledge: it's okay to use process knowledge to classify your waste as hazardous; but if you use process knowledge to say your waste is nonhazardous, be prepared to verify and support your determination. If the process generating the waste doesn't change or you have a written procedure to ensure that the waste stream will remain consistent, KDHE will usually accept one characterization test as support of a waste's nonhazardous status. However, if you are ever in doubt, TEST the waste to verify its status.

## ***Test the waste***

If you don't know if your waste is hazardous, it must be tested by a laboratory approved by KDHE (see the list of approved labs in the appendix following this section). However, you must tell the lab what tests to perform, so you must understand what makes a waste hazardous.

Hazardous waste can be classified two ways:

- because one of its physical "characteristics" make it hazardous, and/or
- because the material is on a "list" of regulated wastes.

### ***Characteristic hazardous waste***

Some hazardous waste streams are classified according to a recognizable "hazard" always associated with them, much like physical attributes such as red hair or blue eyes may be in a family. EPA identification codes for characteristic hazardous wastes use the letter "D" followed by a three-digit number. If a material is a characteristic hazardous waste, (see page 5 of KDHE's *Generator Handbook*), it will have one or more of the following hazardous characteristics:

**NOTE:** *EPA identification waste codes given for hazardous wastes must be identified and tracked, because you will need to use these codes on reporting forms and the hazardous waste shipping manifest paperwork that must accompany waste sent off site for treatment and disposal.*

## ***Ignitability***

An ignitable hazardous waste is a material that has a flash point (fp) of less than 140°F or spontaneously combusts upon exposure to the environment. In print shops, most hazardous wastes associated with ignitables come from press-cleaning and screen-cleaning solvents. The EPA waste identification code for ignitable materials is D001. Flash point is usually found in the "fire and explosion hazard" section of the MSDS.



## ***Reactivity***

Reactive wastes may react violently with air or water, are unstable in normal environmental conditions, may react with water or corrosives to produce toxic gases, or are explosive. The EPA identification code for reactive wastes is D003. Printers usually don't generate many reactive wastes; however, many raw chemicals such as sulfuric and nitric acids may be considered highly reactive in their concentrated forms. Reactivity information may be found in the "Safe handling and storing precautions" section of the MSDS.



## ***Corrosivity***

A waste can be hazardous because of its corrosive nature. This is based on pH value, which can be easily tested at your facility with litmus paper (found at your local drug store), a color indicator of pH value. Liquids with a pH value of 7.0 are neutral; 0-7 are considered acidic; and 7-14 are classed as caustics or alkaline substances. Materials with pH values less than 2.0 or greater than 12.5 must be treated as a hazardous waste due to their highly corrosive nature. The EPA identification code for corrosive wastes is D002. Chemical etch baths and some concentrated alkaline cleaners may be classified as corrosive hazardous wastes. pH values may be found in the "Physical and Chemical" and "Safe handling and storing precautions" sections of the MSDS.



## ***Toxicity***

A toxic characteristic leaching procedure, TCLP, commonly called a "T-clip" or a "total concentration" test is required by a KDHE-certified lab to determine whether or not a waste material is hazardous due to toxicity. The TCLP test procedure shows how much of a material will "leach" out of the material and into the environment. The "totals test" reveals the total amount of contaminant in the sample. If the total amount present is less than 20 times the TCLP regulatory level, the waste is considered nonhazardous due to toxicity. Please see the "Rule of 20" fact sheet in the RCRA appendix.



Printers may use a variety of materials that contain toxic constituents such as regulated metal pigments in inks containing cadmium or chromium, cleaning solvents that contain methyl ethyl ketone (MEK), or a chlorinated solvent like methylene chloride. Regulatory limits are different for each TCLP constituent; the EPA identification codes range from D004 to D043. Refer to the Hazardous Ingredients section of the MSDS to find names of the chemical constituents in the material. Cross reference these with the Toxic Characteristics Constituents Table in table three of KDHE's *Hazardous Waste Generator Handbook*. If the ingredient is on that list, you must then determine if it will be present in any of your waste above the limit given in the TCLP table. Note the waste code and include it in your hazardous waste inventory list.

### ***“Listed” Hazardous Wastes***

The Environmental Protection Agency has assigned certain materials to specific “lists” because of their predictable hazardous nature in specific processes. There are four “lists” of hazardous waste designated by the letters “F,” “K,” “P,” and “U.” These letters, followed by a three-digit code, must be used in the shipping waste identification form.

### ***F-Listed Wastes***

Some wastes are considered hazardous because they come from a generic process normally associated with hazardous wastes, such as degreasing and solvent cleaning. These are on the “F”-listed waste list, page 24 of KDHE's *Hazardous Waste Generator Handbook*. F001-F005 solvents contain several different kinds of ingredients that, if present in greater than 10% before use, will make that cleaner a hazardous waste. Rags contaminated with those cleaners are usually considered a hazardous waste, too. Many printers use F-listed solvents.

### ***K-Listed Wastes***

If the waste comes from a specific process that is known to always generate a hazardous waste, like wastewater treatment sludge from the manufacture of zinc yellow, chrome green, or iron blue pigment production, then these wastes are always classed as a “K”-listed hazardous waste (see page 27 of KDHE's *Hazardous Waste Generator Handbook*).

### ***U and P Lists: Commercial Chemical Products***

Two other lists are associated with commercial chemical products and are intended to designate the chemicals themselves as hazardous waste at the time of disposal. The wastes may be off-spec chemicals of commercial or technical grade; obsolete, expired, or out-of-date products; or any spill cleanup materials associated with these chemicals.

These wastes are divided into two lists according to the quantity at which they are regulated. The “P”-listed wastes, page 31 of KDHE's *Hazardous Waste Generator Handbook*, considered acutely toxic, are regulated when you have accumulated more than 2.2 pounds on site per month. The “U”-listed wastes, page 36 of KDHE's *Hazardous Waste Generator Handbook*, are regulated when you have accumulated more than 55 pounds on site in one month.

Please see the *Kansas Generator Handbook* for “Listed” hazardous waste TCLP constituents and their regulated levels. The updated version of this manual can be found at the following Web site: [www.kdhe.state.ks.us/waste/apps-hw/HW\\_Gen\\_Hndbk\\_2002.pdf](http://www.kdhe.state.ks.us/waste/apps-hw/HW_Gen_Hndbk_2002.pdf)

## **Examples of Listed Hazardous Waste from Print Shops:**

- "F001": Spent halogenated solvents used in cleaning/degreasing processes such as methylene chloride
- "F005": Spent nonhalogenated solvents used in cleaning processes such as toluene, MEK, or benzene
- "K005": Wastewater treatments sludge from the production of chrome green pigments
- "U002": Discarded acetone
- "U019": Discarded benzene
- "P075": Nicotine and nicotine salts

**NOTE:** *Some wastes may be associated with two waste codes, such as MEK: if it is a contaminant in a material at regulated levels, it should be listed as a D035 hazardous waste code; if it is in a solvent used for cleaning (at greater than 10% volume before use), it should be listed using the F005 hazardous waste code. If in doubt identifying the proper waste code for your waste, contact the SBEAP assistants at 800-578-8898.*

## **Hazardous Waste Identification Exercise**

Using the sample MSDS in the RCRA appendix, let's see how to find the information we need to determine if a product will become a hazardous waste at the end of its useful life.

Is this material ignitable? Look at the fire or explosion hazard section; check the flash point (fp); this material indicates N/A. So sulfuric acid is not an ignitable hazardous waste.

Is this material corrosive? Look at the chemical product information and in the "precautionary labeling" section it lists sulfuric acid as a health concern at level "4," which is the highest level for poison; it's listed as a reactive at level "3"; and it's listed for skin contact at level "4" as a corrosive material. So this material in its concentrated form is hazardous; if the acid is diluted for use, the diluted material will have to be pH tested to determine its pH before a hazardous waste determination can be made.

Going to section VII, "Precautions for Safe Handling and Use," note that the EPA waste codes are identified as D002 and D003.

MSDSs are not required to follow a standard format; however, there are standard categories of information that must be provided. Please see the MSDS fact sheet provided in the Introduction appendix for more information on using MSDS fact sheets.

**NOTE:** *Once you have performed a hazardous waste determination for a particular waste, you do not need to repeat the determination unless the type of waste or the way it is generated changes. For example, if there is a significant change in the volume of chemical used, or a new product is added to the operation, you may need to re-evaluate the waste.*

## **Most Common Hazardous Wastes**

The following waste streams can be problematic for printers. Each will be addressed briefly as additional guidance to determine whether or not it would be considered a hazardous waste, based on the way it is used at your shop.

## ***Used Shop Towels***

Classifying used shop towels from printing processes can be a bit confusing because some cleaning rags can be thrown away, whereas others must be handled as a hazardous waste. Shop towels can be made hazardous because of the solvent used on them or because of the soils on them, such as an ink that contains a regulated metal pigment. The following guidelines are provided to help you determine if your used shop rags would be considered a hazardous waste:

If your used shop towels go to a permitted, commercial laundry for cleaning, they do not have to be counted towards your monthly hazardous waste generation rate. However, recyclable towels must be managed in the following manner until they are removed from your facility:

- Lids must be kept on containers of shop towels used with a flammable or listed solvent, such as 105 mineral spirits, toluene, or MEK. Storage containers should be marked: "Used Rags for Recycle."
- Recyclable rags must also pass the paint filter test for "free liquids"; in other words, the rags cannot be dripping with an ignitable or listed solvent when they go to the commercial laundry.
- Rags contaminated with characteristic or listed solvents cannot be air dried before being put in containers.

**NOTE:** *Although your rag drum may look dry from the top layer, many times rags in the bottom of the drum are soaked with solvent. Sending regulated solvents out with used shop towels is considered illegal disposal of the solvent under hazardous waste regulations. These rags should not be sent to a commercial laundry until the liquids are removed.*

Disposable shop towels contaminated with toluene, MEK, methylene chloride, or other "F-listed" solvents should not be thrown into wastes going to the sanitary landfill. F003 solvents such as xylene or acetone may be considered a nonhazardous waste IF they no longer are ignitable, and if they pass the LDR requirements for the solvent in question. For more information, refer to KDHE's technical guidance document "Solvent-contaminated towels or rags, hazardous waste 95-02" in the RCRA appendix following this section.

### ***P2 Tip:***

Recapture used cleaning solvents from shop towels for reuse on site. Reuse solvent as is for cleaning dirty ink trays.

Collect the solvent and recycle through a distillation unit to recover clean solvent.

Collect and dispose of the solvent as a hazardous waste.

Solvent can be recaptured by requiring operators to hand-wring rags before disposing or putting in laundry collection container, or by installing a "false bottom" in the collection drum that allows the solvent to separate from the rags, or by using an explosion-proof centrifuge to remove the solvent. Many commercial laundries provide this service to their clients.

## ***Spent Fixer Solutions***

Untreated photo processing fixer solutions are considered hazardous waste. Spent fixer is almost always a hazardous waste because of the silver content. Silver is regulated metal listed as a TCLP characteristic hazardous waste, waste code D011, when it is present at a concentration of 5 milligrams per liter of concentration (mg/l).

Most spent fixer contains 2000-5000 mg/l of silver. Therefore, it should never be discharged to the sanitary sewer without proper silver recovery, and should never be put into storm drains, septic systems or dry wells, or poured onto the ground. The silver in spent fixer may be recovered on site in electrolytic units as a fairly pure grade of silver or in metallic replacement canisters (MRCs).

**NOTE:** *If the spent fixer is hard-piped to the silver recovery unit from the photo processing unit, the spent fixer does not have to be counted towards your monthly hazardous waste generation rates. However, if the spent fixer is not hard-piped, but collected in a separate container and then run through the recovery unit in batches, it must be counted towards your monthly generation rates.*

If reducers or intensifiers containing mercury or cyanide compounds are used to enhance film images, testing may also be needed to determine if they, too, are present in regulated levels. Silver recovery from spent fixer is covered in more detail in the Clean Water Act section of this manual.

Silver is also present in rinse water following the fix bath because of carryover. Most POTWs do not consider rinse waters to be silver rich to the point of regulation. However, if the local POTW has very stringent limits for silver discharges, facilities may need a primary silver-recovery unit, which removes the bulk of silver in combination with a "tailing" unit. The tailing unit will further treat the relatively low silver concentration in the outlet of the primary treatment unit and is capable of reducing the silver to very low levels, usually acceptable for the city.

Wastes and process waters should only be discharged with approval, preferably in writing,

from their local POTW. For more detail on the preferred management practices for silver-rich wastes, please refer to the following Web sites:

[www.kodak.com/US/en/corp/environment/kes/silver/discharges.jhtml](http://www.kodak.com/US/en/corp/environment/kes/silver/discharges.jhtml)

(Code of Management Practices (CMP) guidance for equipment selection, proper operation and maintenance, and monitoring of silver recovery and management systems)

[www.p2pays.org/ref/01/00048.htm](http://www.p2pays.org/ref/01/00048.htm)

(explanations, diagrams, and operation of MRC and electrolytic systems)

### ***P2 Tips for Spent Fixer:***

Many silver-recovery technologies are available to recapture silver in aqueous solutions: precipitation, ion exchange, metallic replacement, reductive exchange, electrolytic recovery, reverse osmosis, and electrodialysis. Of these technologies, metallic replacement and electrolytic units are most commonly used in recovery of silver from photographic solutions. The amount of waste fixer and level of silver removal needed will influence the choice of technology.

Based on an average concentration of 3000 mg/l concentration per gallon and today's silver prices of \$4.25 per troy ounce, waste fixer may be worth \$1.50 per gallon. But the true savings is in disposal cost—if the spent fixer is disposed as a hazardous waste, it may cost \$3.30 per gallon. Companies that recover silver from their photo developing processes with an electrolytic unit stand to save \$4.80 per gallon! For companies generating three gallons of waste fixer per day, savings from disposal costs alone are almost \$3456, and return from recycled silver would be \$1080—generating a positive cash flow of \$4536 per year! Even with the cost of the equipment, this represents a significant savings and eliminates the long-term liabilities associated with hazardous waste disposal.

## **Waste Cleaning Solvents**

Press-cleaning solvents are often considered hazardous waste. Typical solvents have low flash points and evaporate very quickly. Some of the solvents used are methyl ethyl ketone (MEK), acetone, toluene, xylene, butyl solusol, cyclohexane, methyl isobutyl ketone (MIK), and low-flash mineral spirits. All of these substances are significant sources of volatile organic compounds (VOC), and many of them are also classed as hazardous air pollutants (HAPs) which are regulated more stringently than VOCs under the Clean Air Act Amendments of 1990.

You will have to examine your MSDS to determine if your press-cleaning solvents are considered hazardous waste. Wipes used with the above solvents will become a hazardous waste, if they are not commercially laundered; however, printers must keep in mind that laundering facilities may face stricter discharge regulations for their wash waters in the near future. The best management practice is to reduce the toxicity of the solvent used on the rags, the amount of solvent on the rags, and the number of rags generated.

### **P2 Tips**

The following methods have been used to reduce the amount of press-cleaning solvents used:

Use plunger-can solvent dispensers to control amount of solvent on cleaning wipes. Eliminate open buckets of cleaning solvent at presses.

Use a combination of solvents. Some shops have retained small volumes of low-flash solvent for periodic cleaning of harder-to-clean press components where there is dried ink, varnish, or other debris, and then use a higher flashpoint, lower vapor pressure for daily cleaning. Using low-vapor pressure makes it possible to recover 50-60% of the waste sol-

vent from soiled shop towels. Consult the product MSDS for this information, and only work with vendors that will allow you to use small amounts of their cleaning alternatives on a "test" basis before you purchase a whole drum of something that might not work for your shop. (See the P2 fact sheet "*Is Blanket Washing Taking You to the Cleaners?*" for more information on reducing solvent use.)

Clean presses only when necessary; schedule jobs to reduce cleaning needs.

## **Waste Inks with Regulated Metal Pigments**

Environmental concerns over waste ink center around regulated metals, solvents, and toxicity. If an ink contains color pigments with a regulated toxic metal, see TCLP table 3 in KDHE's *Hazardous Waste Generator Handbook*, such as barium, cadmium, chromium, or lead, or if the ink is mixed with waste solvents classified as hazardous wastes, it must be disposed of as a hazardous waste. A TCLP test is usually needed to determine if waste ink is hazardous because of metal or toxic solvents; however, printers can hold these testing costs down by working with their ink vendors to determine which inks are known to be hazardous and then segregating this ink waste from the other waste inks. This will allow the nonhazardous waste inks to be disposed or recycled more cost-effectively. You may also wish to see the fact sheet *Regulated Metals: the Rule of 20* for a cost-effective testing alternative to the traditional TCLP test for toxics.

## ***P2 Tips***

- Optimize press scheduling to minimize color changes.
- Minimize additions.
- Eliminate inks with regulated metal-based pigments.
- Track ink usage.
- Train press operators in ink-estimating techniques to help them accurately estimate the amount needed for each job.
- Establish ink inventory controls.
- Maximize ink reuse and recycling opportunities.
  - Do not mix small quantities of leftover or obsolete inks with different colors of ink.
  - Keep different types of ink separate.
  - Store excess ink in properly sealed and labeled containers. Place plastic or waxed paper on top of sheet-fed ink and/or spray the ink with an anti-skinning agent, or cover the ink with an ink-compatible oil to prevent skinning and oxidation.
  - Do not dip knives deeply into sheet-fed inks. Removing the ink evenly from the top surface of the ink can reduce the surface area of the ink exposed to oxidation.
  - Transfer used ink back to the original empty container, and prevent drying by keeping ink containers sealed.
- Use anti-skin agents.
- Dedicate presses for specific ink colors if feasible, and dedicate one press for inks with hazardous pigments or solvents.
- Use automatic ink levelers and hard-pipe ink delivery.
- Purchase ink (high-volume process colors) in 55 gallon drums or 250 gallon totes.

## ***It's Hazardous—Now What?***

The next step you must take to comply with hazardous waste regulations is to determine your “status” as a hazardous waste generator, which will determine your regulatory requirements. Hazardous waste generator status is determined by the total amount, in pounds, of hazardous waste generated at your facility during a one-month calendar period.

You may want to transfer all of the wastes that are covered by the RCRA regulation as a hazardous waste to the inventory form below to track the specifics of each waste stream. You will have to store and track everything considered hazardous the calendar month it becomes a waste. This includes *disposable* rags considered hazardous waste, solvents, regulated inks, etc. Total the amount of wastes at the end of the month. Generators of hazardous waste may need to track several months of waste to get a good “picture” of their hazardous waste generation rate.

You are not allowed to average waste generation when calculating monthly generation rates. For example: you have a solvent service provider service a parts washer at your facility. If the parts washer has 8 gallons of solvent in it, the weight of those 8 gallons counts toward the month's generation rate when it is changed out, even if it is replaced only once every three months. (To determine how much a gallon of solvent weighs, multiply the density given on the MSDS x 8.34 pounds/gallon.)

## Sample Hazardous Waste Inventory

Activity	Waste	Hazardous Waste?	Why Hazardous?	Generation Per Month- Gals	Lbs (See Note 1)	Hazardous Waste Codes
Pressroom	Solvents (cleaning)	Yes	Flashpoint <140°F	20	160	D001 Ignitable
Pressroom	Inks-offset Lithographic	No	—	—	—	—
Pressroom	Inks-Flexo solvent- based	Yes	Flashpoint <140°F	3	26	D001 Ignitable
Pressroom	Press oil	No/Yes Depending	Not hazardous waste if recycled	16	—	Not counted if recycled
Facility Wide	Adhesives	Yes	Flashpoint <140°F	2	16	D001 Ignitable
Facility Wide	Fluorescent lamps, batteries	No/Yes Depending	Not hazardous waste if recycled	—	—	Not counted if recycled
Total monthly amount of hazardous waste (See Note 2)				41 gals	332 lbs	

**NOTES:**

- 1) Pounds per month were calculated by using average values for the densities (lbs. /gal) of the wastes. For example: adhesives have a density of 8.0 lb. /gallon; two gallons would weigh 16 lbs.
- 2) Based on this example, the facility would be classified as a Kansas generator, generating more than 55 lbs but less than 1,000 lbs. per calendar month.



## ***Regulatory Levels of Hazardous Waste in Kansas***

There are three hazardous waste generator categories in Kansas, and they differ somewhat from the categories established under the federal regulations. The Kansas regulatory categories are

- Small Quantity Generators: less than 55 pounds hazardous waste in one month
- Kansas Generators: more than 55 pounds but less than 2200 pounds in one month
- EPA Generators: more than 2200 pounds of hazardous waste generated in one month

**NOTE:** *The KDHE regulatory references are from the Kansas Administrative Regulations (KAR), which is provided in the appendix following this section of the workbook. Some federal regulations are adopted as written in the U.S. EPA Code of Federal Regulations (CFRs). Use the following Web site to find those CFRs referenced in the Kansas regulations:*  
[www.gpo.gov/nara/cfr/cfr-retrieve.html#page1](http://www.gpo.gov/nara/cfr/cfr-retrieve.html#page1)

Accurate determination of your generator status is extremely important because more stringent requirements apply to larger generators of hazardous waste. Requirements for EPA generator are significantly greater than for a Kansas generator. Similarly, regulations are more burdensome for Kansas generators than small quantity generators. Most printers will find themselves in the small quantity generator or Kansas generator categories, with few printers being classified as EPA generators.

Requirements for each generator are given in KDHE's *Generator Handbook*, pages 12-15, and the *Kansas Statutes and Administrative Regulations*, pages 20-27. Please refer to those documents for detailed descriptions of each generator category's regulatory requirements.

## ***Notification Forms***

Kansas and EPA generators must file a Notification of Regulated Hazardous Waste Activity form with KDHE in order to obtain an EPA identification number in order to ship hazardous waste as a Kansas or EPA category hazardous waste generator. This form indicates the codes of any and all hazardous wastes shipped off your site under that ID number. If your waste stream changes and a new waste code is added or any other information on that form changes, your notification form must be updated to include the new information before wastes can be shipped from your site. Please see the sample form and instructions provided in the RCRA appendix.

## ***Land Disposal Restrictions (LDR)***

### *Background*

The 1984 Hazardous and Solid Waste Amendments (HSWA) required EPA to evaluate all characteristic and listed hazardous waste to determine which wastes should be restricted from land disposal because of their potential to adversely affect the environment, including surface and underground water supplies. For wastes that are restricted, EPA has set treatment standards to ensure that hazardous constituents will not migrate from the disposal site into the environment. K.A.R. 28-31-14 adopts the federal land disposal restrictions contained in 40 CFR Part 268 by reference.

The first rule, issued in November of 1986, prohibited land disposal of F-listed solvents and dioxin-containing wastes.

**NOTE:** *F003-listed wastes, if they no longer exhibit the ignitable characteristic and if the waste meets the established LDR standard, are NOT considered a hazardous waste. So, for shop towels contaminated with F003 such as acetone or xylene-listed solvents, you must perform LDR tests in order to determine if the towels can be disposed in a sanitary landfill.*

### **Generator Requirements for LDR**

Generator requirements under the land disposal restrictions are two-fold. The first is to determine if the LDR restrictions apply to their waste. The second is to provide notice and certification of the LDR standard for that waste to the storage, treatment, or disposal facilities receiving their waste.

For the majority of characteristic hazardous wastes, the waste must be treated to the point that it no longer exhibits the characteristic. If the waste does not meet the treatment standard, it must be treated by the TSD or likewise permitted facility to meet the standard before a land disposal facility can be used.

For a detailed explanation of the LDR requirements in Kansas, please see pages 15 and 16 of KDHE's handbook.

### **Hazardous Waste Container Management**

Keep containers closed, except when adding or removing waste. Use funnels with valves or other closure device suitable for waste, such as spring-closed lids.

Inspect containers at least once a week and keep a written log of container inspections. Inspection logs should contain at least the following information:

- date and time of inspection
- condition of containers
- labels visible and readable
- containers closed or sealed
- segregation of incompatible wastes
- name of inspector
- number of containers inspected

A sample inspection log is provided in the RCRA appendix following this section.

If a container is not in good condition or if it begins to leak, the generator must transfer the hazardous waste from this container to a container that is in good condition.

Check compatibility of waste with containers; e.g., some acids corrode metal and some solvents dissolve plastics.

Do not mix wastes without checking with your disposal facility. Disposal cost of the mixture will likely be based on the more expensive waste.

The hazardous waste storage area should be clearly labeled and secured against unauthorized entry. Outdoor accumulation of hazardous waste is not recommended.

If hazardous waste is stored outdoors, provisions must be made to contain possible releases, and provide for collection and proper disposal of rainwater and potential vandalism.

The surface of the hazardous waste storage area must be impervious, without cracks or gaps.

Containers holding incompatible hazardous wastes must be separated by means of a dike, berm, wall, or other device. Secondary containment is not required for nonpermanent hazardous waste collection containers; however, it is recommended to limit impacts from spills or other accidental releases.

Ignitable/reactive waste cannot be stored within 50 feet of any property line, and "NO SMOKING" signs must be visible.

**NOTE:** *Tanks are governed by a specific set of regulations. Hazardous waste stored in permanently located, immovable containers of any volume, are considered stationary tanks and must be equipped with secondary containment. Printers who have tanks at their facilities should contact the SBEAP or the Tanks Section of their local KDHE District Office to ensure their tanks are properly managed and registered, if necessary.*

### **Satellite Accumulation Containers (Work Stations)**

Use of "satellite containers" is intended to help generators of small waste streams and small businesses by providing a way to accumulate hazardous waste at a workstation. A generator may accumulate as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste, in containers meeting the following requirements:

- Must accumulate at or near the point of generation.
- Must be under the control of the operator of the process generating the waste.
- Must mark the containers, either with the words "hazardous waste," or with other

words that identify contents of the containers. Do not date until full.

- When the container is full, it must be dated and moved to the hazardous waste accumulation area within three days.

### **RCRA definition of an empty container:**

Empty containers (of hazardous waste) are not regulated under hazardous waste rules. To meet the RCRA definition of "empty," a container must have—

All wastes removed that can be removed using "commonly used practices" for that type of container, e.g., pouring, pumping, aspirating, etc.

No more than 1 inch (2.5 centimeters) of residue remaining on the bottom of the container or inner liner.

No more than 3 percent by weight of the total capacity remaining if capacity is 110 gallons or less.

No more than 0.3 percent by weight of the total capacity remaining if capacity is greater than 110 gallons.

### **Hazardous Waste Labeling**

Clearly label each container in the hazardous waste accumulation area with the following: "Hazardous Waste." A sample label is provided in the RCRA appendix.

The accumulation start date does not need to be put on the container until the day it is completely filled. Kansas generators will soon have restrictions on hazardous waste accumulation times; however, this has not yet been legally implemented.

## ***Shipping Hazardous Waste***

Each Kansas generator (or EPA generator) that generates hazardous waste must have a unique site-specific EPA/KDHE identification number. These numbers are obtained by filing a "Notification of Regulated Waste Activity" form. The state will then assign your facility an EPA ID number which will authorize your facility to ship the waste codes identified on the form. Notification update is one of the most common violations of hazardous waste generators. Updated notification forms are required if your company name, or your company's emergency contact person, or if any waste codes have changed. If you don't have a copy of your original notification form, you can order a copy by calling Lynda Prockish at 785-296-0005 in the Bureau of Waste Management at KDHE.

You must use a licensed hazardous waste transporter for shipping hazardous waste. Printers, like all hazardous waste generators, should choose a waste transporter carefully. Guidelines to help select a waste transporter are provided in this section, and there are certain exceptions for small quantity generators.

Transporters must be approved by KDHE and DOT to pick up hazardous waste in Kansas. See the RCRA appendix for a list of approved hazardous waste transporters.

As a generator of the waste, you must know where your waste is going. Ask your transporter for an audit (documentation of compliance) on the treatment or disposal facility where they are taking your waste, or ask your TSD for a tour of their facility. See the guidance document for "Selecting a hazardous waste transporter" in the RCRA appendix for more information.

## ***Hazardous Waste Manifest***

The hazardous waste manifest is a multiple-copy shipping paper used to track the movement of hazardous waste from generation to disposal. A manifest must accompany every waste shipment leaving your facility unless you are a small quantity generator and are self-transporting your waste to another generator or receiving facility. In that case, you must obtain a receipt to protect yourself. You must keep hazardous waste manifests and receipts together in your files for at least three years, but the SBEAP recommends keeping them forever.

For each pickup, either you or your transporter must provide a manifest. The transporter may provide one, already filled out, except for your signature. Check it to be sure the information is correct, because you, as the generator, are responsible for all violations associated with the manifest. The waste descriptions must comply with U.S. Department of Transportation (DOT) shipping requirements. The pretransporter regulations for hazardous waste containers, labeling, and marking can be found at 49 CFR Parts 172, 173, 178, and 179. The following Web site offers the Code of Federal Regulations to access the above parts: [www.access.gpo.gov/nara/cfr/cfr-retrieve.html#page1](http://www.access.gpo.gov/nara/cfr/cfr-retrieve.html#page1)

Retain a copy of the hazardous waste manifest when the transporter picks up the waste, and match it to the copy received when the waste has reached its final destination. Staple these two copies together for your permanent files along with any Land Disposal Restriction forms received from the transporter, records of waste analyses, material safety data sheets, and any other hazardous waste information pertinent to that shipment. *Note:* Copies of MSDSs must be readily available to your workers.

## ***Exception Reports***

The treatment facility is required to return a signed copy of the manifest to you. If you do not receive a signed copy of the manifest from the receiving facility within 35 days of the shipment, contact the transporter or the facility to obtain a copy. If you still do not receive a signed manifest, you must notify KDHE in writing (Exception Report) after 45 days. The exception report must include steps taken to find the missing copy and include a copy of the original manifest.

## ***Personnel Training***

At a minimum, a training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems. This includes where applicable, waste management practices specific to their job. This training must be documented and completed yearly.

**NOTE:** *Specific training items are not specified in Kansas regulations; however, a training module has been developed by the SBEAP and approved by KDHE for generators' use to fulfill this training requirement. The module can be used for you to conduct your employee training or you may call the SBEAP program to provide this training to your employees, free of charge, to meet your regulatory requirements. Please see the "Training for Hazardous Waste Generators" training agenda in the RCRA appendix.*