Screen Printing Guidelines

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against injury from exposure to hazardous materials, artists can be assured of a long and productive career. The USF Chemical Hygiene Plan and Safety & Compliance in the Arts documents are important resources for more information about hazardous activities and the safe handling of hazardous materials, including chemical storage, safe behaviors, and proper personal protective equipment.

Screen printing facilities/operations deal with materials such as ink, haze removers, and solvents that can harm the environment if not properly managed. State and federal environmental regulations determine how these materials may be used and disposed. Preventing waste and/or pollution in the first place is a better strategy.

What is Pollution Prevention?
Pollution prevention is not making the waste (or pollutant) in the first place. It means making efforts to reduce the amount and toxicity of the wastes generated. Preventing pollution may be as simple as using a catch basin to prevent spills, or as complex as redesigning an operation to increase efficiency and reduce waste. Simple things like choosing non-hazardous solvents can protect the environment and reduce environmental regulation. Pollution prevention means thinking about the environmental impact of an action, and trying to limit the resulting impact.

Why Prevent Pollution?
When generated, waste or pollution must be managed safely and legally. Whether it is household trash or waste from a business, managing wastes costs money. Many purchased materials are used once and then disposed, which costs money. Reducing the amount of wastes generated saves money. Reducing costs is a major reason to prevent pollution. Here are a few others:

- Improved facility environment and student/employee safety.
- Reduced liability.
- Increased efficiency.
- Fewer regulatory requirements.
- Better environmental protection.
- Enhanced marketing and public relations opportunities.

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Mixed Waste

Any waste mixed with a waste that is on the F, P, K, or U lists becomes hazardous waste, even if there is only a very small amount of listed hazardous waste in the mixture.

Is the Waste Hazardous Waste?

To find out if a waste is a hazardous waste, check to see if it is on the lists of hazardous wastes. If it is not, find out if it exhibits one or more of the hazardous characteristics. Check the safety data sheet (SDS) or contact the supplier for information. If you are not 100% sure if a s( )-6.6 (er)-5.9 (i)e(.48e2 T

Discarded shop towels or rags, whether cloth or paper, may be contaminated with hazardous chemicals. If they are, the towels or rags may be hazardous waste. Recall from the Hazardous Waste section that any waste mixed with a listed hazardous waste becomes a hazardous waste. A waste is also a hazardous waste if it meets the definitions of toxic, ignitable, reactive, or corrosive characteristic hazardous wastes. See the Hazardous Waste section, for more information.

"Solvent-Contaminated Wipes" Exclusion

Before disposing of any shop rags (reusable or disposable), determine if they are hazardous waste. Rags that contain listed hazardous wastes (other than solvents) or exhibit the characteristic of corrosivity, reactivity or toxicity due to contaminants other than solvents are a hazardous waste. Rags that are contaminated with ONLY solvents are not considered hazardous waste provided the conditions of the exclusion are met. These are called "Solvent-Contaminated Wipes."

What are Solvent-Contaminated Wipes?

- Wipes containing one or more F001-F005 listed solvent or the corresponding P- or U-listed solvents (see the example list below).
- Wipes that exhibit a hazardous characteristic resulting from a listed solvent.
- Wipes that exhibit only the hazardous characteristic of ignitibility when containing one or more non-listed solvents.

Examples of F001-F005 Listed Solvents

Acetone	Methylene chloride
Ethyl benzene	Tetrachloroethylene
Isobutyl alcohol	Toluene
Methanol	Trichloroethylene (for reusable wipes only)
Methyl ethyl ketone (MEK)	Xylenes

To Meet the Conditions of the Exclusion

Wipes must be:

- Contained in non-leaking, closed containers.
- Void of free liquids.
- Labeled "Excluded Solvent Contaminatedgw10.5 (2.6 (ea)g[S)2 (of)-1705 do23)

With respect to non-hazardous wastewater, USF facilities are generally located in communities that provide sewer collection and wastewater treatment service. These publicly owned wastewater systems have discharge standards and industrial wastewater pretreatment standards. Pretreatment is the reduction, elimination, or alteration of pollutants prior to discharge to a publicly owned wastewater system.

Good waste management

Many solvents contain volatile organic compounds (VOCs). VOCs are chemicals that evaporate into the air and then react with sunlight to form urban ozone (smog). Smog has serious health effects on the human respiratory system. Aside from coughing, headaches, and nausea, smog can cause permanent lung damage. Another category of hazardous chemicals used in printing activities are hazardous air pollutants (HAPs). HAPs are chemicals that are believed to cause cancer. Exposure to HAPs above certain concentrations can also cause health effects such as birth defects, nerve disorders, and other chronic and acute diseases. Many VOCs are also HAPs. VOCs and HAPs may also be regulated hazardous wastes.

The safety data sheet (SDS) will have information on the presence of VOCs and HAPs in the products. Always try to use the material with the lowest percentage of VOCs and HAPs possible.

Here are some suggestions for reducing VOC and HAP use:

Work with vendors to find products that contain little or no air pollutants. Look for low-VOC, HAP-free inks, adhesives, screen cleaners, haze removers, coatings, and other compounds. Do not forget about maintenance chemicals, paints, and cleaning chemicals.

Recycle waste inks. Waste inks of different colors can be blended together to make black ink. A small amount of ink or black toner may be needed to obtain an acceptable color. Look for ink vendors who will take waste ink for re-blending.

Store VOC-containing materials in closed containers. Open containers allow VOCs to evaporate, causing air pollution, potentially unhealthy work environment, and wasting solvent.

Use closed containers for solvent at workstations.

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Remember

Reclaim screens when possible. Clean screens over a container so waste solvent can be captured and reused.

Remove all excess ink or other chemicals from screens before disposal.

A hazardous waste determination must be made prior to disposal and use the correct disposal process. Carefully follow the rules for managing hazardous waste. See the Hazardous Waste section