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print making



photography



metal working



drawing



painting



jewelry making



printing



ceramics  
calligraphy



wood working

# Environmental Health & Safety in the Arts: A Guide for K-12 Schools, Colleges and Artisans

Proper Management of Waste and Residuals from Art Studios and Shop Practices

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This compliance assistance project was undertaken in connection with a settlement of an enforcement action taken by EPA against Pratt Institute for alleged violations of the regulations governing wastes.

# TABLE OF CONTENTS

<b>FOREWORD AND ACKNOWLEDGEMENTS.....</b>	<b>iv</b>
<b>SECTION 1.0 INTRODUCTION .....</b>	<b>1-1</b>
1.1 Proper Waste Management and Disposal .....	1-1
1.2 Art Instructors' Obligations.....	1-1
1.3 Document Organization.....	1-2
<b>SECTION 2.0 HAZARDOUS WASTE MANAGEMENT BASICS .....</b>	<b>2-1</b>
2.1 The Resource Conservation and Recovery Act .....	2-1
2.2 RCRA's Hazardous Waste Program.....	2-1
2.3 Material Knowledge/Material Safety Data Sheets.....	2-2
2.4 Hazardous Waste Identification/How to Determine What Constitutes Hazardous Waste.....	2-2
2.5 Universal Waste.....	2-5
<b>SECTION 3.0 HAZARDOUS WASTE GENERATOR REQUIREMENTS/ ENSURING TECHNICAL COMPLIANCE .....</b>	<b>3-1</b>
3.1 Hazardous Waste Generators.....	3-1
3.1.1 Generator Categories .....	3-1
3.1.2 Definition of a site (facility) .....	3-1
3.1.3 Counting Monthly Waste Generation.....	3-2
3.1.4 Haz. Waste Identification Number .....	3-2
3.1.5 Meeting the requirements .....	3-2
3.2 Basic Requirements for CESQGs.....	3-2
3.3 Hazardous Waste Storage and Labeling .....	3-2
3.3.1 Storage Areas and Accumulation Areas .....	3-3
3.4 Emergency Preparedness and Prevention .....	3-4
3.4.1 Contingency Plan – Spills, Releases.....	3-5
3.4.2 Emergency Response – Incident Command .....	3-5
3.4.3 Transport and Disposal.....	3-6
3.4.4 Inspection and Record Keeping.....	3-6
3.4.5 Training .....	3-6
3.5 Off-Site Shipping Requirements.....	3-6
<b>SECTION 4.0 EXPANDING THE HEALTH AND SAFETY PROGRAM .....</b>	<b>4-1</b>
4.1 Know the Materials You Use and Store .....	4-2
4.2 The Community's Right to Know and the Workers' Right to Know .....	4-2
4.2.1 Your Community's Right to Know and Emergency Planning .....	4-2
4.2.2 The Workers' Right to Know .....	4-3
4.3 Minimizing Exposure .....	4-4
<b>SECTION 5.0 SOURCES OF POTENTIALLY HAZARDOUS WASTE IN ART STUDIOS .....</b>	<b>5-1</b>
5.1 Painting and Solvents Use .....	5-2
5.1.1 Major Dangers .....	5-2
5.1.2 Less Obvious Dangers .....	5-2
5.1.3 Safety Suggestions.....	5-2
5.1.4 Disposal .....	5-3
5.2 Ceramics.....	5-4
5.2.1 Major Dangers .....	5-4
5.2.2 Less Obvious Dangers .....	5-4
5.2.3 Safety Suggestions.....	5-6
5.2.4 Disposal .....	5-6

5.3 Jewelry Making and Small Metals .....	5-7
5.3.1 Major Dangers .....	5-7
5.3.2 Safety Suggestions.....	5-8
5.3.3 Disposal .....	5-8
5.3.4 Recommended Alternative Materials .....	5-8
5.4 Photography.....	5-8
5.4.1 Major Dangers .....	5-8
5.4.2 Less Obvious Dangers .....	5-9
5.4.3 Developing Process Awareness .....	5-9
5.4.4 Safety Suggestions.....	5-11
5.4.5 Disposal .....	5-11
5.5 Printing and Printmaking.....	5-11
5.5.1 Major Dangers .....	5-11
5.5.2 Safety Suggestions.....	5-13
5.5.3 Disposal .....	5-14
5.5.4 Recommended Alternatives.....	5-14
5.6 Metalworking and Foundry .....	5-14
5.6.1 Major Dangers .....	5-14
5.6.2 Less Obvious Dangers .....	5-15
5.6.3 Safety Suggestions.....	5-16
5.6.4 Disposal .....	5-16
5.7 Design and Architecture; and Model Making.....	5-16
5.7.1 Major Dangers .....	5-16
5.7.2 Less Obvious Dangers .....	5-17
5.7.3 Safety Suggestions.....	5-17
5.7.4 Disposal .....	5-18
5.7.5 Recommended Alternatives.....	5-18
5.8 Drawing Materials and Pastels .....	5-18
5.8.1 Safety Suggestions.....	5-18
5.9 Sculpture.....	5-18
5.9.1 Major Dangers .....	5-18
5.9.2 Less Obvious Dangers .....	5-19
5.9.3 Safety Suggestions.....	5-19
5.9.4 Disposal .....	5-20
5.9.5 Recommended Alternatives.....	5-20
5.10 Woodworking .....	5-20
5.10.1 Major Dangers .....	5-20
5.10.2 Less Obvious Dangers .....	5-21
5.10.3 Safety Suggestions.....	5-21
5.10.4 Disposal .....	5-21
5.10.5 Recommended Alternatives.....	5-22
5.11 Audio/Video and Computer Labs .....	5-22
<b>SECTION 6.0 POLLUTION PREVENTION AND WASTE MINIMIZATION .....</b>	<b>6-1</b>
6.1 Less is More .....	6-1
6.2 Organic and Inorganic Wastes.....	6-1
6.3 Standard Operating Procedures (SOPs).....	6-2
6.4 Good Housekeeping .....	6-3
6.5 Waste Segregation .....	6-3
6.6 Waste Minimization Program.....	6-3
6.7 Waste Management Hierarchy .....	6-4
6.7.1 Reusing .....	6-4
6.7.2 Recycling.....	6-4
6.7.3 Reclaiming.....	6-4

6.7.4 Landfill Disposal .....	6-5
6.7.5 Generator Responsibility and Liability .....	6-5
6.8 Toxics Use Reduction.....	6-6
6.9 Planning Ahead .....	6-6

**APPENDICES**

<b>A</b>	<b>CHARACTERISTIC WASTES: D, AND LISTED HAZARDOUS WASTES: F, P, AND U</b>
<b>B</b>	<b>BEST MANAGEMENT PRACTICES AND RECORD KEEPING CHECKLIST FORMS</b>
<b>C</b>	<b>POTENTIALLY REGULATED CHEMICALS</b>
<b>D</b>	<b>LIST OF ART MATERIALS SUPPLIERS</b>
<b>E</b>	<b>INTERNET RESOURCES</b>
<b>F</b>	<b>SAFE HANDLING, TREATMENT AND DISPOSAL</b>
<b>G</b>	<b>NEW YORK AND NEW JERSEY - REGULATORY DIFFERENCES SUMMARY</b>
<b>H</b>	<b>LIST OF ACRONYMS AND DEFINITIONS OF KEY ENVIRONMENTAL TERMS</b>

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## FOREWORD AND ACKNOWLEDGEMENTS



### FOREWORD

*Dear Educator for the Visual Arts,*

This publication has been prepared as a supplemental environmental project in conformance with a compliance agreement with the United States Environmental Protection Agency (U.S. EPA). It has been prepared to assist you in complying with the Federal Hazardous Waste Management Regulations.

*Note: This document focuses on the federal hazardous waste management requirements. State and local government entities may have requirements that are different/more stringent than the Federal requirements; it is important to become familiar with, and comply with, the state and local requirements as well as those of the federal government.*

The intent also is to expand the focus of educational standards for the Arts to include basic environmental, health and safety training information on the hazardous materials, hazardous substances and hazardous waste found in various art mediums and processes.

### ***Knowing and Using Arts Materials and Resources***

*“Students will be knowledgeable about and make use of the materials and resources available for participation in the arts in various roles.”*

While every attempt has been made to present complete and accurate information on applicable regulations, please be aware that any inadvertent misrepresentations or omissions do not relieve any person from any regulatory compliance requirements of state, local or

federal law. The complete regulations may be accessed online from U.S. EPA or NYSDEC (websites are listed in the appendices), and may also be obtained in hard copy from many public libraries.

*“Safety isn’t just one more thing. It’s Everything!”*

*General Motors motto*

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## SECTION 1.0 INTRODUCTION



Numerous health hazards and environmental risks are associated with the creation of art. Art instructors are in a unique position to not only prevent pollution by the careful selection, use and management of art materials, but also to pass on their knowledge to their students.

This document is intended to provide a basic understanding of the potential hazards present in various art materials and processes. Many art materials contain regulated hazardous substances which, by law, must be disposed of properly. As the teacher or supervisor in charge of the area, it is your responsibility to provide a safe “workplace” for all your students and to ensure that all hazardous waste is managed properly.

### 1.1 Proper Waste Management and Disposal

Proper waste management and disposal is important for everyone. It is also required by law. The Environmental Protection Agency (EPA) was empowered by Congress to enact rulemaking that would protect the public from improper waste disposal. The Resource Conservation and Recovery Act (RCRA) requires that a generator of hazardous waste manages it “from cradle to grave”.

In order to ensure a safe future, personal commitment to regulatory compliance is important.

### 1.2 Art Instructors’ Obligations

In general, the obligation of art instructors is to ensure a safe environment for everyone – themselves, their students, other faculty members and visitors to the classroom or studio. This requires creating an environment that encourages minimal use and exposure to hazardous materials by, for example, disposing of existing hazardous materials and using more environmentally-friendly materials, and educating students in the proper handling techniques and maintenance of the area in a way that benefits everyone.

Legal obligations are discussed in further detail later in this document. Basically, they include:

- Creating and maintaining a safe environment;
- Keeping an inventory of potentially hazardous art materials;
- Informing others of the potential risks by:
  - providing Material Safety Data Sheets (MSDSs) for review by anyone who will be using the product;

- alerting school officials and other emergency responders to assist them in emergency response planning;
- Submitting annual reports to government agencies as required; and
- Ensuring proper disposal of hazardous wastes.

### 1.3 Document Organization

The remainder of this document is organized as follows:

- Section 2.0 Hazardous Waste Management Basics
- Section 3.0 Hazardous Waste Generator Requirements/ Ensuring Technical Compliance
- Section 4.0 Expanding the Health & Safety Program
- Section 5.0 Sources of Potentially Hazardous Waste in Art Studios
- Section 6.0 Pollution Prevention And Waste Minimization

Appendices contain additional information that includes lists of regulated chemicals and hazardous wastes; codes; definitions of environmental acronyms and terms; record keeping checklists; where to obtain additional information (including useful websites); and preferred, environmentally-friendly vendors.



## SECTION 2.0 HAZARDOUS WASTE MANAGEMENT BASICS



### 2.1 The Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to deal with the large quantities of municipal and industrial solid waste, as well as hazardous waste that is generated throughout the United States. Under RCRA, the EPA developed regulations to attain the goals listed below, in large part by setting requirements at all levels of waste management by commercial, industrial and governmental facilities, to ensure that such wastes would be properly managed. These regulations are contained in Title 40 of the *Code of Federal Regulations (CFR)*, [Parts 240-282].

RCRA has four goals:

1. To protect human health and the environment from the hazards posed by waste disposal;
2. To conserve energy and natural resources through waste recycling and recovery;
3. To reduce or eliminate the amount of waste generated, including hazardous waste; and



4. To ensure that wastes are managed properly to protect human health and the environment.

*RCRA contains three separate, yet related programs: hazardous waste; solid waste; and, underground storage tanks. However, for the purposes of this document, only Subtitle C – Hazardous Waste Program is discussed.*

### 2.2 RCRA's Hazardous Waste Program

The Hazardous Waste Program under RCRA provides a system to manage hazardous wastes “from cradle to grave” (i.e., from initial generation to ultimate disposal). The primary objective of this program is to ensure that hazardous wastes are handled in a manner that protects human health and the environment.

Consequently, the program deals with hazardous waste generation and transportation, as well as treatment, storage, and disposal.

### 2.3 Material Knowledge/Material Safety Data Sheets

All art materials used or stored in the art studio or classroom and shop areas should have an accompanying Material Safety Data Sheet (MSDS). An MSDS provides detailed information about the product, including physical data (such as boiling point, melting point, and flash point), toxicity, health risks, reactivity, necessary personal protective equipment, spill cleanup, disposal and recommendations for storage and handling. It is important to be familiar with the information contained in the MSDS for each chemical that you use. The MSDS should be readily available for review by anyone having a need to know about process raw materials.

### 2.4 Hazardous Waste Identification/How to Determine What Constitutes Hazardous Waste

Proper hazardous waste identification is critical. Review the following three questions to determine if the material is potentially hazardous waste. (See Section 5.0. for a list of potentially hazardous wastes that are commonly found in art studios and shops.)

#### 1. Is the material a solid waste?

For a material to be considered a hazardous waste, it must first be considered a solid waste. Hazardous wastes are a subset of solid wastes. As strange as it may sound, a solid waste does not have to be a solid. According to RCRA, a solid waste is defined as any material that is discarded by being either abandoned, inherently waste-like, or recycled. As such, a “solid waste” can be a solid, liquid or compressed gas.

#### 2. Is the waste excluded?

There are several exclusions under RCRA that apply to specific waste streams. These exclusions would not normally apply to an art studio or workshop, with the exception of hazardous waste samples. Specifically, samples of hazardous wastes can be sent to a laboratory to aid in determining whether the waste is a hazardous waste. These samples are typically taken and transported solely for the purpose of

waste characterization and are regulated differently than other hazardous waste.

#### 3. Is the waste a listed or characteristic hazardous waste?

Once it has been determined that the waste is a solid waste and not excluded, the next step is to figure out whether it is actually hazardous. There are two ways by which a waste can be considered hazardous:

- 1) It can be listed as a hazardous waste; and/or
- 2) It can exhibit certain characteristics particular to a hazardous waste.

#### Listed Hazardous Wastes

There are four lists of hazardous wastes - F, K, P, and U. Of these, F-wastes are generated from generic processes, K-wastes are from specific industrial sectors, and P- and U-wastes are unused pure chemical products and formulations. Of these, U, P and several K wastes may apply to art wastes. Such wastes are deemed dangerous based on their origin, and, consequently, are considered listed hazardous wastes. The lists are summarized below (see Appendix A for entire lists).

- F List – This list includes hazardous wastes from common industrial and manufacturing processes. The processes that generate such wastes can take place in various sectors, and, consequently, F-listed wastes are known as wastes from non-specific sources. There are seven groups of wastes contained in the F list, which are as follows:
  - Spent solvent wastes (waste codes F001 through F005);
  - Electroplating and other metal finishing wastes (F006 through F012, and F019);
  - Dioxin-bearing wastes (F020 through F023, and F026 through F028);
  - Chlorinated aliphatic hydrocarbons production wastes (F024 and F025);
  - Wood preserving wastes (F032, F-34, and F035);
  - Petroleum refinery wastewater treatment sludges (F037 and F038); and
  - Multisource leachate (F039).



Of the above groupings, the two most likely to be found in an art studio or shop are spent solvent wastes (waste codes F001 through F005), and electroplating and other metal finishing wastes (F006 through F012, and F019).

- K List – This list contains wastes from very specific industrial and manufacturing sectors. Consequently, K listed wastes are known as wastes from specific sources. There are 13 categories of industries that are covered in the K list, none which would apply to standard art related classrooms studios/shops. Consequently, this list is not discussed further in this document.
- P and U Lists – These two lists cover pure and commercial grade formulations of certain unused chemicals that are being disposed. Unused chemicals can become wastes for various reasons, such as being spilled, exceeding the expiration date, change in activities that eliminate the need for the material making them obsolete, or because they no longer meet the specifications necessary for their intended use. In order for a chemical waste to fall under the P or U lists, the waste must meet the following criteria:
  - The listed chemical in the waste must be unused and the listed chemical in the waste must be in the form of a commercial chemical product and the sole active ingredient in the chemical formulation; or,
  - A residue or contaminated media that contains one of the chemicals listed on the P or U lists.

P wastes are considered acutely hazardous wastes. As such, generating or storing a relatively small amount (1 kg, or 2.2 lbs) can make you subject to certain large quantity generator management and disposal requirements (see Section 3.0).

Note that a container that previously held a P waste is also considered a hazardous waste, unless it is triple-rinsed (with the rinsate managed as a P waste). However, it is recommended that such a container be managed and disposed of as a P waste, rather than rinsing out the P waste contents, as this is generally safer and more cost-effective.

Some examples of P and U wastes that may be found in art studios, classrooms and school

buildings include, but are not limited to, the following:

- P wastes - cyanide salts used in photography; certain pesticides used in buildings and grounds; some chemical inventory found in chemistry classrooms and physics labs; and, epinephrine and nitroglycerin in the nurses' station.
- U wastes – acetone; 2-butanone; ethyl acetate; ethyl ether; dichloromethane; methyl ethyl ketone; certain solvents; acrylamide; hydrofluoric acid; and, thiourea in jewelry making and photography.



#### Characteristic Hazardous Wastes

A characteristic hazardous waste is one that exhibits certain properties that indicate that it poses enough of a threat to be considered hazardous. A characteristic waste may or may not also be a listed hazardous waste (as defined above). If a waste is listed as a hazardous waste *and* exhibits the characteristics discussed below, it may be subject to more extensive requirements. However, it is possible for a waste to not be a listed waste (i.e., F, K, P, or U), but still exhibit one or more hazardous characteristics. In order to determine whether the solid waste exhibits one or more of the following characteristics, a sample may need to be sent to an authorized laboratory for testing. Alternatively, a chemical's MSDS often includes relevant information, such as the flash point or constituent concentrations, that may allow you to make the determination without testing. It is recommended that, in either case, you document the method used to make the waste determination and keep the documentation; this information will be useful in discussions with

your waste hauler, during inspections by regulators and for use by other staff members who may work with you or succeed you in management of particular waste streams.

There are four hazardous waste characteristics established by EPA: Ignitability, Corrosivity, Reactivity and Toxicity. If your waste meets any one of these, it is considered a hazardous waste:

- **Ignitability** – This characteristic applies to wastes that **can readily catch fire and sustain combustion**. Paints and cleaners often fall under this category. An ignitable waste can be either a liquid or a non-liquid, though most tend to be in the liquid form. A laboratory will typically perform a flash point test to determine the lowest temperature at which fumes from the waste will ignite when exposed to a flame. If the flash point is below 140 °F, the waste is considered to be hazardous.

*Ignitable wastes have the waste code D001, and are some of the most common types of wastes generated.*

- **Corrosivity** – This characteristic applies to wastes that are highly acidic or alkaline (basic). These wastes are typically liquids, and **can easily corrode/dissolve flesh, metal, or other materials**. Spent sulfuric acid is a common example of a corrosive waste. There are two criteria that are used to determine whether a waste falls under this category:
  - pH test: if the waste has a pH less than or equal to 2, or greater than or equal to 12.5, it is considered corrosive; and
  - Steel test: if the waste can corrode steel under specific conditions, it is considered corrosive.

*Corrosive wastes have the waste code D002, and are commonly generated by art programs.*

- **Reactivity** – This characteristic applies to wastes that are unstable and easily explode or undergo violent reactions, or react to or release toxic gases, fumes or vapors when mixed with water or under other conditions such as heat or pressure. While such wastes are not as common in art as other types of waste, it is still possible to find facilities that have these chemicals and do not know they are reactive. If you do not identify these reactive chemicals, you risk inadvertently storing them near, or allowing mixing with, incompatible chemicals. Accordingly, it is important to check MSDSs or

other sources of technical information to determine if the materials stored or used in the art department are, or could become, reactive with age, inappropriate storage, or mixture with other chemicals.

Materials that may be reactive include acetyl chloride, chromic acid, cyanides, hypochlorites, organic peroxides, perchlorates, permanganates, and sulfides. Several common processes involving reactive chemicals are described below, though this is not an exhaustive list of art processes that may use such chemicals:

- **Cyanides** – Cyanide compounds can be found in art departments with jewelry programs, as well as occasionally in metal sculpture departments, that have small cyanide plating baths. Users are often aware that the chemical can be dangerous, but don't often know that hydrochloric acid (and other acids) should not be stored on the shelf above the bath, as a strong reaction can occur if these are mixed. In addition, the hexacyanoferrates used in cyanotype, blue print, and in Prussian blue pigment should be considered true cyanides in determining chemical compatibility.
- **Organic Peroxides** – Organic peroxides are common curing agents for polyester resins used in sculpture and several other types of two-component resin systems.
- **Perchlorates** - Potassium perchlorate is used in printmaking departments for an etching process called Dutch Mordant. Perchlorate should not be contaminated with organic substances or acids. Additionally, in schools, it should be stored away from areas with general student access, as it can be used for making pyrotechnics.
- **Sulfides** - Sulfides are used in certain photographic toners and pigments (e.g., cadmium sulfide, mercuric sulfide.)

*Reactive wastes have the waste code D003.*

- **Toxicity** – EPA developed a toxicity characteristic to identify wastes that are likely to leach dangerous concentrations of toxic chemicals into underground water when disposed of in landfills. It is based on a laboratory procedure known as the Toxicity Characteristic Leaching Procedure (TCLP). It recreates the leaching process and conditions to determine how a waste will act in a typical landfill. During this process, a liquid “leachate”

is created from the waste (if it is a solid) in the laboratory. If the waste is a liquid, then the waste itself is considered to be the extract or leachate. If the leachate contains one or more certain hazardous chemicals in concentrations that exceed corresponding regulatory limits, the original waste is deemed to exhibit the toxicity characteristic.

*Toxicity characteristic wastes have the codes D004 through D043. Among the wastes regulated under the toxicity characteristic are several solvents and a number of metals commonly used in the visual arts programs.*

See Appendix A for a list of the hazardous wastes and the corresponding codes. Keep in mind that the list is not exhaustive and some “unlisted” or non-regulated wastes may still be toxic and/or pose other risks of harm if improperly handled, such as glycol ethers, epoxies, plasticizers, lube and hydraulic oils, metal shavings/borings, silicas, turpentine and PCBs, to mention a few. The saying goes “even if it’s not listed, if it will melt metal or plastic, it’s probably not too good for you!”

## 2.5 Universal Waste

In order to promote the collection and recycling of certain **widely generated hazardous wastes**, known as universal wastes, EPA developed the Universal Waste Program. Through this streamlined subset of the hazardous waste regulations, EPA has eased the regulatory burden on facilities that generate these particular ubiquitous wastes. Wastes covered under the universal waste program include:

- Hazardous waste batteries (e.g., rechargeable nickel-cadmium, lithium);
- Lead containing devices (e.g., cathode ray tubes, lead acid batteries, printed circuit boards and electronics);
- Waste mercury-containing devices (e.g., thermometers, thermostats, barometers, manometers, temperature and pressure gauges); and

- Hazardous waste bulbs (e.g., fluorescent lights, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps - these usually contain mercury).

*Note that hazardous waste pesticides that are recalled or collected in a pesticide collection program are also considered universal wastes, but are not typically used in art studios/shops. However, pesticides from a school’s facility maintenance shop or agriculture program may fall under this program.*

See Section 3.0 for a discussion of obligations relative to ensuring compliance with applicable Hazardous Waste Management regulations.



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## SECTION 3.0 HAZARDOUS WASTE GENERATOR REQUIREMENTS/ ENSURING TECHNICAL COMPLIANCE



### 3.1 Hazardous Waste Generators

Hazardous waste generators are broadly defined as any person, by site, who creates or produces or brings a hazardous waste into the United States. Such generators and sites in the art field could include individual artists or craftspeople working in their studios or shops, art teachers or technicians in public or private schools at the high school or college level, artists' cooperatives in which many artists work together, or businesses whose products are artistic works.

#### 3.1.1 Generator Categories

Such entities are classified according to quantity of hazardous waste generated, as follows:

- Large Quantity Generators (LQGs): LQGs produce more than 1,000 kg (2,200 lbs) in a calendar month, or more than 1 kg (2.2 lbs) of acutely hazardous waste in a calendar month;
- Small Quantity Generators (SQGs): SQGs produce less than 1,000 kg (2,200 lbs) but more than 100 kg (220 lbs) of hazardous waste per month, and accumulate less than 6,000 kg (13,200 lbs) of hazardous waste at any time; and
- Conditionally Exempt Small Quantity Generators (CESQGs): CESQGs are those that generate less than 100 kg (220 lbs) of hazardous waste in a calendar month and less than 1 kg (2.2 lbs) of acutely hazardous waste in a calendar month. Additionally, CESQGs

must limit accumulation to less than 1,000 kg (2,200 lbs) of hazardous waste, or 100 kg (220 lbs) of any residue from the cleanup of a spill of acute hazardous waste at any time.

#### 3.1.2 Definition of a site (facility)

Determining which category you fall into must be done on a facility-wide basis. In a school, for example, it is not just the quantity of hazardous waste generated in your art department that matters, but the total quantity of hazardous waste generated by the entire school or facility that determines the category. Included in the total will be waste from building maintenance and cleaning, science classes, and all other departments. In fact, for purposes of hazardous waste management, the definition of a facility is based on the property boundaries, rather than buildings. For example, a high school, middle school and district administrative office on a single parcel of land would generally constitute a single "site" or "facility" for purposes of hazardous waste regulations. Alternatively, if a school district has a maintenance facility or administration building on a parcel of land that is not contiguous with the land containing the school, the former would constitute a separate facility and would determine its waste generation rate and corresponding level of requirements based solely on wastes generated on that property; similarly, the high school would not count

wastes from the remote site in its generation rate.

### 3.1.3 Counting Monthly Waste Generation

Even if you only generate a small amount of hazardous waste in your department, you are subject to the requirements of the category into which your whole facility falls.

While art cooperatives and art business owners must calculate their monthly quantities and determine their categories, it is not possible for a single art teacher in a school to calculate the total waste accumulation for the entire facility. Instead, the school's environmental personnel, or the school or district staff designated to manage your waste, must provide you with the category into which your facility falls.

It is possible for a facility to be in any of the three categories. Remember that, since these categories are based on monthly generation quantities, it is possible to be in one category during a certain month and in another category during a different month. In general, the more hazardous waste a facility generates, the more strict the applicable regulations. Consequently, it is important to be constantly mindful of the quantities of hazardous wastes generated in your area, to manage your materials properly to keep hazardous waste generation to a minimum and to confer with your environmental/waste management staff on a regular basis. If you are in a situation where the category changes from time to time, for example between a CESQG and a SQG, it might be simpler, safer, and provide less opportunities for errors if you picked the SQG category and maintained compliance with its requirements permanently.

### 3.1.4 Haz. Waste Identification Number

The site (facility) definition is also used in obtaining a unique hazardous waste generator identification number from the U.S. EPA or a delegated state if the facility is a SQG or LQG at any time. This number, often referred to colloquially as a "RCRA ID", is used on

manifests for shipment of all hazardous wastes.

### 3.1.5 Meeting the requirements

Once you know the category into which your facility falls, this booklet will provide the requirements for proper handling and disposal of your hazardous waste.

**This section of the manual focuses on the requirements for SQGs, though certain portions (as specified) also apply to CESQGs. Additional requirements for LQGs are also noted where applicable.**

## 3.2 Basic Requirements for CESQGs

If you are a CESQG, there are three primary requirements with which you must comply:

- Account for all the hazardous waste you generate, and stay below the monthly, facility-wide thresholds of 100 kg of hazardous waste and 1 kg of acute hazardous waste;
- Do not store more than 1,000 kg of hazardous waste at any one time; and
- Ensure that your hazardous waste is sent to one of the following types of facilities:
  - a permitted hazardous waste treatment, storage, or disposal facility;
  - a facility that reuses, recycles or reclaims the hazardous waste; or,
  - A permitted industrial or municipal landfill.

Note that some states may have additional requirements for CESQGs. Hence, it is important to check with your state to find out if you should be doing something more to stay in compliance.

## 3.3 Hazardous Waste Storage and Labeling

Regardless of what hazardous waste generator category you are in, good container management helps protect health and the environment by preventing spills or releases. While required for SQGs and/or LQGs, the

following are also recommended practices for CESQGs:

- Labeling containers such that the contents (including anything that might be hazardous) are clear to those handling the materials;
- Storage of incompatible compounds or wastes in separate containers;
- Secondary containment for waste containers; and,
- Keeping containers that hold hazardous waste closed, except when adding or removing waste.

### 3.3.1 Storage Areas and Accumulation Areas

#### Satellite Accumulation Area

The hazardous waste regulations are written using a “cradle-to-grave” approach to waste management, ensuring that hazardous waste is properly identified and safely managed from the time and place at which it becomes a waste until it is properly treated or disposed of at a permitted facility. The first step is identification of the hazardous waste by the generator (e.g., artist, teacher) and collecting the waste in an appropriate container within a satellite accumulation area, an area at or near the point of generation where a SQG or LQG can store limited quantities of hazardous waste. As such, managing a satellite accumulation area is the task most commonly applicable to art teachers, art students with studios or separate work areas, or artists working in a commercial environment (i.e., not alone in a personal studio.)

Typically, facility maintenance, operations or custodial staff will be responsible for moving full containers to the hazardous waste storage area and overseeing offsite shipment. However, it is important to understand the process, and know who within your organization is responsible for each aspect of waste management, so you can determine (in consultation with the waste management personnel) the best way to store, package, label and otherwise safely store your waste, respond to a spill or unintended release, and make arrangements for waste removal.

You are allowed to accumulate a total of up to 55 gallons of hazardous waste per waste stream or one quart of acutely hazardous waste (see P List in Appendix A) in an area that is:

- At or near the point of waste generation;
- Under the supervision of the person/operator overseeing the process that generated the waste;
- The waste must be moved to the facility’s main centralized hazardous waste storage area within three calendar days after the accumulation of 55 gallons of hazardous waste or 1 kg of acute hazardous waste is exceeded (but it is recommended that smaller containers be moved to the storage area when they become full.)

Furthermore, for hazardous waste containers in the satellite storage area, you must:

- Label each container with the words “Hazardous Waste” and with other words that identify the contents;
- Use containers that are made of materials compatible with the waste to be stored;
- Keep containers that hold hazardous waste closed, except when adding or removing waste; and,
- Maintain the containers in good condition.

In addition to the accumulation requirements above, it is recommended that you do not open, handle or stack containers such that they may rupture, leak or fall and that you do not mix wastes that are incompatible.

Even though you are allowed to store up to 55 gallons in a satellite accumulation area, as previously noted, it is a good and safer practice to use smaller containers (e.g., 500 ml, 5 gallon.) and move each to the main central storage area when it is full.

#### Centralized Container Storage Area

There are generally two categories of centralized hazardous waste storage areas: less than 90 days storage for LQGs and less than 180 days storage for SQGs (or 270 days if the SQG must ship the waste 200 miles or more). Note that these time limits are based on

calendar days and not business days. In addition, the accumulation start date begins when the waste container is placed in storage (either directly or when moved from a satellite storage area).

A centralized hazardous waste storage area is similar to a waste warehouse. It is the main storage facility for the hazardous waste generator and, as such, it is in this location that the waste removed from studio and lab satellite accumulation areas are placed pending off-site disposal.

For hazardous waste containers placed in the centralized hazardous waste storage area, you must:

- Mark the container with the date on which it is placed in storage;
- Label the container with the words “Hazardous Waste” and with any other words that will specifically identify the contents of the container. For example, use “Acetone and Toluene” rather than “Organic Solvents,” which is not specific enough ;
- Ensure that the maximum storage time allowed is not exceeded;
- Provide enough aisle space between containers, or rows of containers, to allow inspection of the label and container condition, as well as enough space to allow access to the area to investigate or respond to a release or other emergency; and,
- Inspect the storage area at least weekly to ensure that container leaks and deterioration are prevented.

In addition, it is recommended that the facility:

- Note the address, as well as the specific location, where the waste was generated (for example, Art Studio, Room 222).
- Permanently mark any container of 110 gallons or less to be used for transportation of hazardous waste with the standard red and white, or red and yellow, hazardous waste label (shown at the end of this section.)

SQG and LQG facilities that store hazardous waste must have the following equipment (unless none of the hazards posed by the waste handled at the facility could require a particular kind of equipment specified below):

- An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;
- A device, such as a telephone ( immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;
- Portable fire extinguisher, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and
- Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

The above equipment, where required, must be tested and maintained as necessary to ensure proper working order in the event of an emergency.

In addition, all personnel in the process of handling hazardous waste must have immediate access to an internal alarm or emergency communication device. These facilities (SQGs and LQGs) are also required to maintain aisle space in the centralized hazardous waste storage area to ensure the unobstructed movement of personnel and emergency equipment.

### **3.4 Emergency Preparedness and Prevention**

Emergency preparedness and prevention means having procedures in place to prevent, prepare for, and respond to spills and releases that could occur in the classroom, lab, shop or studio. Everyone who uses the facility needs to know what they should do, how to do it, and who to call. LQGs are responsible for complying with “preparedness and prevention” requirements in the event of emergencies, including preparing a written contingency plan and training employees in hazardous waste management and emergency

response.; while this would generally be handled by, or in conjunction with, a facility manager, it is useful to understand the purpose and scope of such planning. It may also be useful for your facility, even if not an LQG, to perform this task.

This section outlines the components of an emergency response system that needs to be in place in the event of a spill or release.

### 3.4.1 Contingency Plan – Spills, Releases

#### Spill Response Plan

If one does not already exist, a spill response plan needs to be developed for the materials you use in the classroom, studio or shop. When preparing a spill response plan, consider the following:

- Type and quantity of materials handled;
- Toxicity of and dangers associated with the materials;
- Ease of release into the environment; and,
- Each responsible individual's role (see Section 2.4.2, below)

The MSDS for a substance is a good place to begin gathering information needed for spill response; it contains recommendations for cleanup procedures and personal protective equipment (e.g., gloves, respirators, protective clothing). Consult the manufacturer, waste disposal broker, and/or other chemical engineering sources for recommended cleanup materials and methods.

#### Spill Kit

A Spill Kit is a collection of spill control materials used to contain spills anticipated in the spill control plan. It generally includes absorbents and other spill control methods, for example: Vermiculite®, spill pillows, personal protective equipment, neutralizing materials, and cleanup tools. Create cleanup kits for the major substances used in the studio or shop and label them clearly. Indicate what PPE should be used under what conditions.

Spill cleanup materials also need to be disposed properly. If anything is contaminated with hazardous waste, it needs to be disposed using hazardous waste procedures.



### 3.4.2 Emergency Response – Incident Command

The emergency response system for your classroom, shop, studio or lab should conform to the one for your entire facility. Familiarize yourself with your facility's emergency action plan, including the evacuation plan and who to contact in an emergency. All LQGs and SQGs are required to have, and CESQGs should have, the following information posted next to each telephone closest to where hazardous waste is generated (i.e., satellite accumulation areas) or stored:

- The name and telephone number of the emergency coordinator/contact;
- Locations of fire extinguishers, spill control kits, and the fire alarm pull stations; and
- The telephone number of the local fire department.

In the event of an emergency, alert everyone in the area of the spill or release and evacuate the area if necessary. In the event of a fire or medical emergency, call 911. Follow the spill response plan. By having the right equipment ready and accessible, knowing what chemicals are used at a location and their associated

risks, having procedures in place to respond and knowing each person's role in the event of a spill or other accident, the potential for such an event to cause harm can be greatly reduced.

### 3.4.3 Transport and Disposal

If any spill materials need to be transported and disposed, keep records of the date, transporter, and quantity. Complete a manifest for regulated hazardous waste shipments and employ only licensed hazardous waste transporters and TSD facilities (facilities that treat, store or dispose of hazardous wastes).

### 3.4.4 Inspection and Record Keeping

It is very important to keep records of the materials you have in storage. Keep track of the chemicals you have, how old they are, and where they are located.

Conduct regular inspections of storage areas and, though not required, maintain records of those inspections. Included in Appendix E are examples of weekly inspection checklists for "Satellite Accumulation Areas" and "90-Day/180-Day Storage Areas." While the former is not required to be inspected, it is a good idea to do so weekly to ensure that wastes are labeled, containers are closed and other requirements and safe practices are being followed, and that any previously noted concerns have been promptly corrected.

### 3.4.5 Training

Train those who are in the area regularly (staff and students), as well as anyone who is responsible for identifying or managing hazardous waste, on the handling of any hazardous materials or hazardous wastes. Make sure they know which materials are used in the studio or lab, as well as the appropriate methods to handle spills and releases.

Training should occur at least at the beginning of each school year and whenever new types of potentially hazardous materials are added to your inventory. Staff and students should also be trained in the use of personal

protective equipment during handling of hazardous materials or wastes. For activities that produce excessive dust, vapor or fumes, staff and students must be trained in the fitting of and use of face masks or other respiratory protective equipment.

Keep training records that indicate who was trained, the content of the training, and the date of the training. Because such training is specifically required for LQGs, documentation of the training of each employee, along with a description of their job duties (including any duties that involve waste determination and/or hazardous waste management) must be kept on site for at least three years. While not required for SQGs and CESQGs, similar procedures should be used in case the facility becomes an LQG, if only for a short period, in the future.

### 3.5 Off-Site Shipping Requirements

EPA has adopted the Department of Transportation's (DOT's) packaging, labeling, marking and placarding regulations to ensure the safe transportation of hazardous waste from its point of generation to its final disposal site.

Proper packaging is essential to prevent leakage of hazard waste during transport or in the event of even a minor accident, such as a container falling over.

Labeling, marking and placarding of the waste containers must correctly identify the hazardous characteristics of the waste and any risks in storing and transporting the waste.



If you are a CESQG, you are not required to use a manifest when shipping hazardous waste



off site, but careful identification and tracking of the waste is strongly recommended. Since LQGs and SQGs are required to ensure that hazardous waste is transported to a permitted hazardous waste treatment or disposal facility, or to a facility that reuses, recycles or reclaims the hazardous waste [40 CFR 261.5(g)(3)], the manifest provides tracking documentation to prove that you have managed your waste “from cradle to grave.”

If you, as a CESQG, decide on a bill of lading as shipping documentation, obtain and keep receipts and records from any hazardous waste contractors that list the EPA or state identification numbers of the transporter and the facility to which the waste is taken.

SQG and LQG facilities are required to consign hazardous waste solely to transporters and hazardous waste management facilities that have EPA identification numbers [40 CFR 262.12(c)], and must use the uniform waste manifest.

SQGs may be excused from the manifest requirement in the following circumstances: [40 CFR 262.20(e)]

- If the waste is reclaimed under a contractual agreement pursuant to which:
  1. The type of waste and frequency of shipments are specified in the agreement;
  2. The vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the waste reclaimer; and
- The waste generator maintains a copy of the reclamation agreement in his files for a period of at least three years after termination or expiration of the agreement.

Included as Appendix G is a table summarizing regulatory differences and select basic requirements for New York and New Jersey.

**HAZARDOUS WASTE**

**FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.**  
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

GENERATOR INFORMATION:

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

EPA ID NO. / MANIFEST DOCUMENT NO. \_\_\_\_\_ / \_\_\_\_\_

ACCUMULATION START DATE \_\_\_\_\_ EPA WASTE NO. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

**HANDLE WITH CARE!**

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