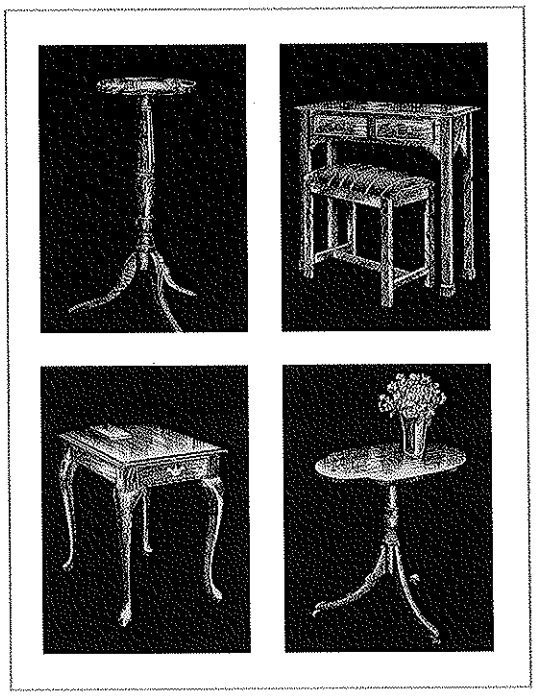
A First Place Finish

An Environmental Guide for Maine Wood Finishers



August 1999

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This Guide was developed by the following:

Maine Department of Environmental Protection (DEP), Office of Innovation and Assistance offers free services such as: phone assistance on compliance issues and pollution prevention, on-site assessments, workshops, seminars, written materials, and information and research on pollution prevention and environmental compliance.

Maine Wood Products Association (MWPA) represents over 100 companies who manufacture a wide variety of forest and wood products. MWPA seeks to improve the competitive position of its members and build quality employment in Maine by sharing technical, marketing, and business expertise.

This Guide was also prepared by the Northeast Waste Management Officials' Association (NEWMOA). NEWMOA is a nonprofit, nonpartisan interstate organization that addresses regional waste and pollution prevention issues. NEWMOA provides a forum for increased communication and cooperation among the member states, a vehicle for the development of unified positions on various issues and programs, and a source for research and training. The NEWMOA member states are Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

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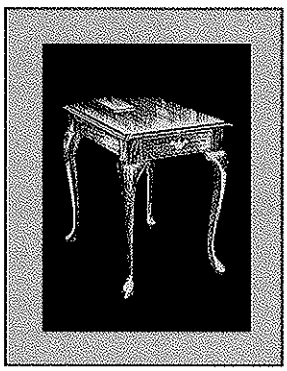
Mention of any company, process or product name should not be considered an endorsement by ME DEP, MWPA, NEWMOA, or the U.S. EPA

Table of Contents



Introduction

We have designed this environmental compliance assistance guide to help you, the small and medium-sized wood finisher, to meet your environmental obligations. The guide contains a self-assessment checklist and other information on pollution prevention and compliance with Maine Department of Environmental Protections' (DEP) laws and regulations on air pollution, hazardous waste, and wastewater disposal.

How to Use This Guide

We have tried to make this guide clear and concise, but with enough detail so that most of your questions will be answered. The information in this guide is divided into three parts: compliance checklists, pollution prevention (P2) tips, and appendices.

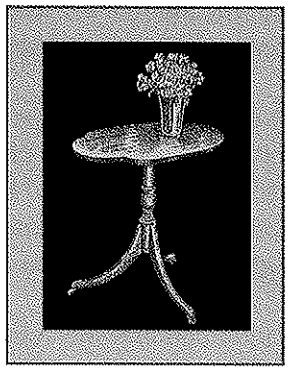
The compliance checklists are based on the type of waste that is generated: air emissions, hazardous wastes, and wastewater. Questions are presented in a yes/no checklist format so that if you can answer "yes" to a question, you are likely to be in compliance with that requirement. An answer of "no" could indicate a potential problem that you should investigate further. **If your answer is "no," you might have a problem if inspected.**

If available, the following information resources should help you complete the checklist questions:

- purchase and/or material usage records for the last 12 months,
- material inventories for the last 12 months,
- material safety data sheets (MSDS) for all products you use,
- hazardous waste shipment manifests, and
- currently held state or local permits, such as discharge permits.

The next section briefly discusses P2 and waste reduction strategies for wood coaters, including case studies illustrating the savings realized by companies that have implemented one (or more) or these strategies. The appendix section contains additional materials we think you might find useful, such as sample forms, and fact sheets.

If you are not sure whether a particular practice or activity at your facility meets the regulations, please contact the Maine DEP's Office of Innovation and Assistance Small Business Technical Assistance Program (SBTAP) toll free in the State of Maine at (800) 789-9802, and they will get answers for you.



Top Ten Tips for Environmental Success

- ***Learn about pollution prevention*** - The less waste you generate in the first place, the less there is to be regulated and the easier your job will be to maintain compliance. You will also save money, improve health in the workplace and contribute to environmental protection. Switching to high-solids finish materials, improving transfer efficiency, and minimizing wastes related to clean-up are just some of the general strategies you might employ to prevent pollution.

- ***Keep good records*** - Keep every receipt, bill of lading, and hazardous waste manifest every time you buy materials or dispose of your waste. Good records, filed by year and easily accessible, will help you keep better track of material use and waste management. If you are inspected, good recordkeeping can minimize the time and effort involved. Good recordkeeping can also expedite a property sale or loan.

- ***Involve your employees*** - More often than not, the people on the shop floor have **good ideas on how to generate less waste**. Reward them! If their idea saves the company money, consider giving them a percentage of the savings. Make sure your employees know that you **welcome their ideas** and that they will not get in trouble for showing that the way things are currently done creates unnecessary waste.

- ***Call your vendors and others in the industry*** - Ask is there a non-toxic substitute for your present coating?.. is there a non-hazardous substitute for your thinner?.. what do others use that might work for you? But also **BEWARE and learn about the trade-offs**: for example, "compliant coatings" that are reformulated with acetone might increase your facility's safety hazard since acetone is highly flammable. Acetone is also a listed Chapter 137 air toxic in Maine. "Compliant" coatings are not necessarily the same as "safe" coatings.

- ***Learn how to read an MSDS and avoid toxics*** - Material Safety Data Sheets (MSDSs) are documents that come with most chemical products you buy. They give you key environmental, health, and work place safety information. Reading an MSDS before making a purchase could help you avoid problems down the road. Avoid commonly used solvents like toluene, xylene, MEK, MIBK, methanol, and methylene chloride. Ask your supplier for **less hazardous alternatives**.

- ***Train your staff*** - Often times, training is looked upon as unproductive overhead; you can't sell training like you can a product. However, proper spray technique can reduce coating use by 10-20 percent and using the correct spray gun settings can save you up to another 20 percent. Ask your supplier to help you determine proper spray gun settings and spray technique. A well-trained staff produce finished work more efficiently, create less waste, spill less, and have fewer accidents. These add up to **increased profits in the long run**.

- ***Be aware of fire and other worker health and safety hazards*** - Don't store solvents or used rags near ignition sources. Keep used rags in closed metal containers. Enforce an appropriate no smoking policy. Ground your containers of flammable liquids or solids when dispensing or adding materials. Take advantage of the Maine Bureau of Labor Standards **free and confidential** consultation and training service, Safety Works, to assist you in maintaining

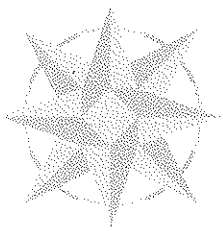
a safe workplace by calling toll free (877) SAFE-345. Be sure to ask them for a copy of the 1999 OSHA report, *A Guide for Protecting Workers from Woodworking Hazards*.

- ***Label waste containers and put them in one spot*** - Nothing can get you into trouble faster than sloppy, disorganized waste storage. Separate your waste storage from your product storage area. There are several requirements for proper waste storage - see the Hazardous Waste section of this guide or call the DEP Bureau of Remediation and Waste Management at (207)-287-2651 for more information.

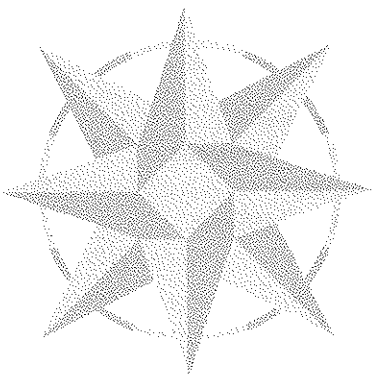
- ***Don't throw it in the dumpster*** - Hazardous substances should never be handled like regular trash. See the Hazardous Waste section of this guide or call the DEP Bureau of Remediation and Waste Management at (207)-287-2651 for information on proper disposal of hazardous wastes. Look for ways to recycle non-hazardous wastes such as scrap wood, corrugated cardboard, and paper. Contact your local solid waste management facility for recycling information and assistance (see Recyclable Materials Fact Sheet for contact information) or call the Recycling Hotline at (800) 932-7100.

- ***Ask for help*** - As burdensome as environmental regulations may seem, they were created to protect you and your workers and they are here to stay. So stay ahead of the game - use the technical resources available to you - we are here to help you understand and comply with the regulations and look for waste prevention opportunities. **Call us! We offer free technical assistance** ranging from answering an anonymous question over the phone to providing you with a team of experts for on-site assistance. You've got nothing to lose, and maybe a lot to gain, by calling the...

Maine Small Business Technical Assistance Program - (800) 789-9802



Self-Assessment Checklists



At the time of publication, all the regulatory information in this guide was accurate. However, laws and regulations can change frequently. You should check with the DEP to find out if there have been any regulatory changes that affect your facility. ***It is ultimately your responsibility to know and understand the health, safety, and environmental regulations that apply to your business.***

Information and Assistance Resources

Department of Environmental Protection

Pollution Prevention and Compliance Assistance

- **Office of Innovation and Assistance:**
  Ron Dyer 207-287-4152
- **Small Business Technical Assistance Program:** 800-789-9802
  Brian Kavanah 207-287-6188

Air Emissions

- **Permit Assistance:**
  Marc Cone 207-287-2437
- **Air Toxics:**
  Ellen Doering 207-287-2437

Hazardous Waste

- **Manifest and Notification Questions:**
  Fred Hagan 207-287-2651
- **Response Services:**
  David Sait 207-287-2651
- **Voluntary Clean-up:**
  Nick Hodgkins 207-287-2651

Solid Waste

Paula Clark 207-287-2651

Wastewater

- **General Assistance:**
  Augusta 207-287-3901
- **Regional Offices:**
  Bangor 207-941-4570
  Portland 207-822-6300
  Presque Isle 207-764-0477
- **Permit Assistance:**
  Michael Barden 207-287-7700
- **Underground Injection Control Program:** 207-287-3901

Internet Web Site:
http://www.state.me.us/dep

Business Assistance

- **Maine Business Assistance Center:**
  Brian Dancause 207-287-3153

Health and Safety

- **Maine Bureau of Labor Standards:**
  Safety Works Program 877-SAFE-345

Trade Association

- **Maine Wood Products Association:**
  Eric Howard 207-368-5954

Air Emissions

Maine wood finishers that use solvent-based coatings could be affected by both federal and state air emission control requirements. The regulatory programs and their implications are presented below.

- Many solvents used in the wood coating industry are primarily made up of one or more volatile organic compounds (VOCs). VOCs combine and interact with other pollutants in the air to form "ground-level ozone," the main component of "smog." In order to help reduce the formation of ground-level ozone, VOC emissions are regulated under the federal Clean Air Act and also under several sections of Maine's Air Pollution Control Rules.

- Many individual VOCs are associated with harmful effects to human health. Under the 1990 Clean Air Act Amendments (CAAA), the U.S. EPA identified a list of 188 hazardous air pollutants (HAPs), many of which are VOCs. HAP emissions are regulated by Maine under the federal CAAA. The list of 188 HAPs is contained in Appendix A.

- Maine also regulates emissions of toxic air pollutants in Chapter 137. Many Chapter 137 pollutants are also VOCs and HAPs. A source is regulated by the Maine Air Toxics Program whenever it uses, processes or manufactures any listed compound at or above its specified threshold quantity. The list of Chapter 137 pollutants is contained in Appendix B. The threshold quantity is 2,000 pounds per year for every compound, unless a lower quantity is listed. The associated regulations can be obtained by calling the Air Toxics Program at (207) 287-2437.

To learn more about the chemicals you use, including how hazardous they are and the concentration of VOCs, HAPs, and Chapter 137 pollutants they contain, you need to understand the information provided by your suppliers on the material safety data sheet (MSDS) for each coating, gluing, washoff, and cleaning material you purchase. The MSDSs combined with the list of HAPs and Chapter 137 pollutants provides key information to help you determine how you might be regulated in Maine.

Some of the solvents typically contained in the coatings and other materials used by wood finishers are outlined in Table 1. Note that this is not an exhaustive list - there are many more chemicals that could be in your coating, gluing, washoff and cleaning materials that are also of concern.

Table 1: Commonly Used Solvents

CHEMICAL	VOC	HAP	Chapter 137
Acetone	No	No	Yes
Methanol	Yes	Yes	Yes
Methylene Chloride	Yes	Yes	Yes
Methyl Ethyl Ketone (MEK)	Yes	Yes	Yes
Methyl Isobutyl Ketone (MIBK)	Yes	Yes	Yes
Toluene	Yes	Yes	Yes
Xylene	Yes	Yes	Yes

Maine requires that facilities report their use of Chapter 137 pollutants if the quantity used at the facility exceeds the reporting threshold. If your facility's use of even one Chapter 137 pollutant exceeds the reporting threshold, the facility must prepare and submit an emission statement to the DEP. Instructions for calculating your annual use of Chapter 137 pollutants are included in Appendix B. The reporting thresholds for some of the solvents commonly used by wood finishers is listed in Table 2.

Table 2: Reporting Thresholds for Commonly Used Chapter 137 Air Toxics

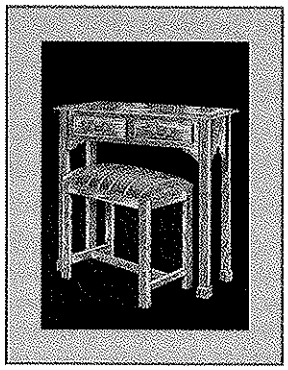
CHEMICAL	REPORTING THRESHOLD (lbs. used/year)
Acetone	2,000
Methanol	2,000
Methylene Chloride	2,000
Methyl Ethyl Ketone (MEK)	2,000
Methyl Isobutyl Ketone (MIBK)	2,000
Toluene	2,000
Xylene	2,000

The self-assessment checklist in the following section can help you to evaluate air emissions at your facility and alert you to any potential compliance issues.

There are also potential indoor air quality problems associated with woodworking and finishing operations, including hazards from wood dust and finishing chemicals. Please contact the Maine Bureau of Labor Standards at (800) 828-2436 and request a copy of the 1999 OSHA report, *A Guide to Protecting Workers from Woodworking Hazards*. Also, take advantage of their free and confidential consultation and training service to assist you in maintaining a safe workplace.

Self-Assessment: Air Emissions

	Yes	No
1. We maintain purchase and/or usage records to document the quantity of material we use that contains VOCs, HAPs and Chapter 137 air toxics in each year. ***You should keep your records for at least five years.***	☐	☐
2. We keep the MSDS for each coating, gluing, washoff and cleaning material that we use. ***You should keep your MSDSs for at least five years.***	☐	☐
3. Our facility is below the reporting threshold for all Chapter 137 pollutants. If not, we have informed the DEP Bureau of Air Quality. ***Details on how to calculate your annual use of Chapter 137 pollutants are contained in Appendix B. Call the Air Toxics Program at (207) 287-2437 with any questions.***	☐	☐
4. We have calculated our facility's potential to emit VOCs and HAPs. ***Details on how to calculate your potential to emit are contained in Appendix C. Call the DEP Bureau of Air Quality at (207) 287-2437 with any questions.***	☐	☐
5. Our VOC and HAP calculations show that all of the following are true: • our potential to emit VOCs is less than 25 tons per year; and • our potential to emit HAPs is less than 10 tons per year of any one HAP and less than 25 tons per year for any combination of HAPs. ***If you answer "No" to this question, you have additional regulatory requirements. Facilities with the potential to emit 25 tons or more of VOCs, the potential to emit 10 tons or more of any one HAP, or 25 tons or more of a combination of HAPs annually are subject to extensive regulatory requirements. Contact DEP Permit Assistance at (207) 287-2437 to determine your obligations.***	☐	☐



Hazardous wastes commonly generated by wood finishers, and their corresponding waste codes are listed in Table 3. Note that this is not an exhaustive list - there could be other wastes generated at your facility that might also be of concern.

Table 3: Commonly Generated Hazardous Wastes

GENERAL WASTE STREAM	USUAL WASTE CODE	LIKELY HAZARDOUS PROPERTIES
Thinner, clean-up solvents, still bottoms	D001, D004, F003 F005	Typically ignitable, petroleum-based solvents that contain toxic constituents.
Stains, sealers, lacquers	D001, D004, F003 F005	Often have ignitable solvents that may contain toxic constituents such as methyl ethyl ketone (MEK).
Paints, paint-related materials	D001, D004 F003, F005	Often have ignitable solvents or >5% petroleum content that contain toxic constituents. Some colored paints may be toxic for metals.
Lacquer dust, rags,* spraybooth filters	D001, D004	Could be hazardous if meets a characteristic of hazardous waste such as ignitable or toxic.
Parts cleaning solvents	D001, D004, F001	Typically ignitable, petroleum-based solvents that contain toxic constituents.

* Rags can be handled and disposed of as a non-hazardous waste as long as they do not contain free liquids, are not capable of causing a fire through spontaneous combustion, and have not been contaminated with a listed hazardous waste (note: many solvent-based coatings are listed wastes).

Wastes can be hazardous because they are "listed" wastes, "characteristic" wastes, or a hazardous waste mixture. Listed hazardous wastes are specific chemicals and wastes generated from either generic or specific industrial processes. For example, spent solvents are a listed waste. Listed hazardous wastes carry waste codes beginning with F. Wastes that are not listed can also be hazardous if they are classified as characteristic wastes because they are ignitable (D001), corrosive (D002), reactive (D003), and/or toxic (D004-D043). For example, many pigmented coatings contain metals that could be of concern due to their toxicity. Generally, wastes from the wood finishing process are characteristic hazardous wastes because of ignitability and/or toxicity.

You need to perform a "hazardous waste determination" on each type of waste generated at your facility to determine whether or not it is a hazardous waste. If the waste is a listed waste, it is automatically a hazardous waste. If the waste is not a listed waste, you can make the

hazardous waste determination either by "knowledge of the process" (including information from the MSDSs of the raw materials), or by actual laboratory analysis.

In addition to knowing which of your wastes are hazardous, you also need to know how much hazardous waste is generated each month. If you generate any amount of hazardous waste, you are subject to Maine's hazardous waste regulations. However, "Small Quantity Generators" (SQGs) have fewer regulatory requirements than facilities in the "Small Quantity Generators Plus" (SQG Plus) category. Facilities that are classified as "Generators" have extensive requirements. Many, if not most, wood products manufacturers should be able to qualify as an SQG or SQG Plus.

Small Quantity Generator (SQG)

An SQG is a facility who:

produces less than 220 pounds of hazardous waste (approximately $^1/_2$ of a 55 gallon drum) per month; AND

accumulates less than one 55- gallon drum of hazardous waste on site at any one time.

Small Quantity Generator (SQG) Plus

An SQG Plus is a facility who:

generates less than 220 pounds of hazardous waste per month; AND

accumulates up to three (3) 55-gallon drums of hazardous waste on site at any one time.

The self-assessment checklist in the following section can help you to evaluate the hazardous waste management procedures in place at your facility and alert you to any potential deficiencies. The checklist will help you comply with SQG and SQG Plus requirements. If you generate more than 220 pounds of hazardous waste per month (approximately $^1/_2$ of a 55-gallon drum), you are a Generator and subject to extensive requirements. Additional information about Maine's hazardous waste regulations is contained in the *Handbook for Hazardous Waste Generators* available by contacting the Bureau of Remediation and Hazardous Waste at (207) 287-2651.

The safe storage, transport and disposal of your hazardous wastes can reduce your environmental liability. The cost of cleaning up an accidental release is much higher than the cost of proper hazardous waste management.

Self-Assessment: Hazardous Waste

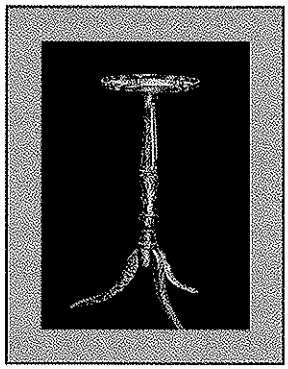
Questions for all size generators:

	Yes	No
1. We have determined which of our wastes are hazardous and which are not.	☐	☐
Check Material Safety Data Sheets (MSDS) to pre-screen new products being considered for use. An MSDS can provide key environmental, health and work-place safety information. Reading an MSDS before buying a product can help you decide if the product will add to your generation of hazardous waste. Talk to your vendors about non-hazardous alternatives. If you have questions, call the Bureau of Remediation and Hazardous Waste at (207) 287-2651.		
2. Our containers are labeled with the words "Hazardous Waste," the date ..... when the first drop of waste was placed in the container, and the date when the container becomes full.	☐	☐
3. We do not store a container of hazardous waste for more than 180 days ..... after it becomes full.	☐	☐
4. We ship hazardous wastes to licensed treatment, storage or disposal ..... facilities (TSDF) using licensed hazardous waste transporters and hazardous waste manifests.	☐	☐
• ***A list of transporters licensed by the state of Maine can be obtained by calling the Bureau of Remediation and Hazardous Waste at (207) 287-2651.***		
• ***After each shipment of hazardous waste from your facility, you must mail a copy of the manifest to the DEP and to the state where your waste is transported to.***		
• ***An example copy of the hazardous waste manifest and instructions is included in Appendix D.***		
5. We do not treat our hazardous waste.	☐	☐
Typical forms of treatment might include compaction, distillation, evaporation, or combustion (burning). No company is allowed to treat waste on site without a license. If you think you might be doing something that could be considered treat-ment, you should call the Bureau of Remediation and Hazardous Waste at (207) 287-2651 to see if a license is required.		
6. If any hazardous waste or hazardous matter leaks, spills or discharges ..... from its primary container, we immediately notify the State Police at (800) 452-4664.	☐	☐
The State Police will notify the DEP. A written report must be sent to the DEP within 15 days of a hazardous waste spill and within 30 days of a hazardous matter spill.		
7. We do not ship any liquid wastes, even if not hazardous, to a landfill.	☐	☐
All solid waste landfills prohibit acceptance of any hazardous waste for disposal. Landfills of any type are prohibited from accepting liquid wastes of any kind. Do not put liquid wastes in the trash.		

Questions for Small Quantity Generators (SQG) Only:	Yes	No
1. We have calculated our monthly waste generation rate and storage accumulation and have determined that we are a small quantity generator (SQG). ***SQG facilities can use Maine's generic user ID# MEX020000000 on their hazardous waste manifests.***	☐	☐
2. We store our hazardous waste in containers that are of 55-gallon size or less.	☐	☐
3. We never accumulate more than 55-gallons (1 drum) of hazardous waste on-site at one time. ***A word of CAUTION!! If you ever accumulate more than 55-gallons of hazardous waste at any one time you are subject to all the requirements of a SQG Plus (or possibly a Generator) for as long as you have continue to have more than 55-gallons of waste on site.***	☐	☐

Questions for Small Quantity Generator (SQG) Plus Facilities Only:		
1. We have calculated our monthly waste generation rate and storage accumulation and have determined that we are a small quantity generator (SQG) Plus.	☐	☐
2. We have filed a "Hazardous Waste Notification Form" with the Bureau of Remediation and Waste Management. ***All SQG Plus facilities must notify the Bureau of Remediation and Waste Management and obtain a hazardous waste identification number. The Hazardous Waste Notification Form and Instructions are contained in Appendix E.***	☐	☐
3. We never accumulate more than three (3) 55-gallon containers of hazardous waste on-site at one time. ***A word of CAUTION!! If you ever accumulate more than three (3) 55-gallon drums of hazardous waste at any one time you are subject to all the requirements of a Generator for as long as you have continue to have more than three (3) 55-gallon drums of waste on-site.***	☐	☐

	Yes	No
4. Hazardous wastes are stored in containers that meet the following: ..... • are compatible with the waste being stored • are free of rust, dents, bulges, leaks or other damage • are clearly labeled with the EPA waste number, the date the container started accumulating waste, the words "Hazardous Waste" and other words that identify the contents (e.g. "oily debris, or "cleaning solvent"), and the date when the container becomes full • are kept closed except to add or remove waste (a drum-mounted funnel must be covered for the container to be considered closed) • containers holding ignitable wastes (e.g. lacquer thinner) must be made of metal and be grounded, and must be located at least 50 feet from the property line ***Segregating waste streams and preventing mixing of wastes makes recycling easier and might lower disposal costs.***	☐	☐
5. We inspect our containers of hazardous waste daily and keep a log. ..... ***The log must contain the inspectors name (or initials), the date and time of the inspection, and the results of the inspection. The logs must be kept on site for at least one year.***	☐	☐
6. The hazardous waste containers are stored in an area that: ..... • has a firm working surface and is impervious to leaks (e.g. concrete or asphalt with all cracks appropriately sealed); and • has secondary containment sufficient to contain all leaks (e.g. hold 20% of all the waste in storage, or 110% of the largest single container in storage, whichever is the greater amount). ***It is a good idea to leave at least 3 feet of aisle space between containers to allow for inspection and remediation. The area should be protected from unauthorized access and inadvertent damage by vehicles or equipment. The storage area should not be near floor and storm drains.***	☐	☐
7. If we plan to cease generating hazardous waste (e.g. switching to an ..... alternative technology, selling the business, or moving to a different location) we will notify the DEP 45 days prior to closure and hire an independent professional engineer to certify that the site is free of contamination.	☐	☐



Wastewater

All facilities generate some type of wastewater. Wastewater discharges are regulated by the Division of Water Resource Regulation in Augusta and through three Regional Offices (see the Information and Assistance Resources Section for the Regional Office nearest you). Wastewater can be generated from bathroom and kitchen facilities (known as sanitary or domestic wastewater), from manufacturing or other processes (known as process, or non-domestic wastewater), or it can be a combination of sanitary and process wastewater. **Under no circumstances should hazardous materials, such as cleaning solvents or coatings be discharged to any type of wastewater system.** Liquid wastes that contain hazardous constituents must be collected and handled as a hazardous waste.

Wastewater discharge is typically to a municipal wastewater treatment plant, an on-site subsurface system (e.g. septic system or dry well), or in very limited circumstances, to the surface of the ground.

Discharge to Municipal Sewer System

Anyone discharging any type of wastewater (sanitary and/or non-sanitary) to a municipal sewer system must obtain permission from the pretreatment coordinator or lead operator at the municipal wastewater treatment facility. This individual will determine what conditions, if any, will be placed on the applicant's discharge depending on quantity and quality of the wastewater.

Discharge to an On-site System

Sanitary Wastewater Discharges Only

The discharge of typical domestic sanitary wastewater to an on site subsurface wastewater system (e.g. septic system) is permitted if, the system was designed by a licensed site evaluator and the owner received the appropriate approval from the local plumbing inspector or code enforcement officer to install the system. The use of these systems is regulated by the Department of Human Services' Division of Health Engineering and you can obtain more information by contacting them at (207) 287-5338.

Non-sanitary Wastewater Discharges

The discharge of anything other than typical domestic sanitary wastewater to an on site subsurface wastewater system (e.g. septic system or dry well) is generally prohibited and, if allowed, requires a permit from the DEP's Division of Water Resource Regulation Underground Injection Control Program. Depending of the make-up and volume of the discharge, the facility may be able to obtain a permit to legally discharge this type of wastewater to an on-site subsurface, wastewater system.

Discharges to the Ground (Daylighting) of Non-Sanitary Wastewater

Under limited circumstances, non-sanitary wastewater may be discharged through a pipe to the top of the ground provided the following criteria are met:

- the pipe must discharge on top of the ground in an area that is accessible for inspection by the DEP; the pipe must not discharge directly into a ditch, stream, wetland, pond or other surface water body;
- the volume of wastewater does not exceed 60 gallons per day (and proper erosion control methods are used for discharge volumes over 30 gallons per day); and
- there is no significant potential for pollutants to drip, leak, spill or wash into the source of the wastewater (typically, the wastewater source is floor drains).

In order to determine if your proposed activity is suitable, please contact the Underground Injection Control Program in the Division of Water Resource Regulation at (207) 287-3901.

Stormwater Discharges

Your facility could be subject to federal stormwater discharge permit requirements. Stormwater results from rain, snowmelt or other precipitation-related drainage. Facilities that are primarily a lumber or wood products facility (SIC code 24) must submit a Notice of Intent[1] or an individual application to the U.S. EPA if both of the following are true:

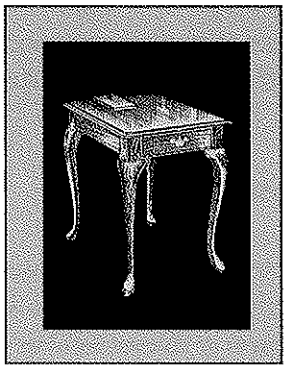
- stormwater runoff from your property runs through a conveyance such as a pipe, ditch or swale (either natural or manmade); and
- the stormwater collected discharges to a waterway such as a stream, lake or wetland, either directly or through a larger stormwater collection system (e.g. storm sewer in the street) that eventually discharges to a waterway.

If your facility is primarily engaged in wood furniture production (under SIC code 24 or 25) or the manufacture of wood cabinets (SIC 2434) you are only subject to stormwater permit requirements if both of the above are true AND your raw material, finished products, by-products or material handling equipment could be exposed to stormwater (e.g, storing materials outside). Please contact U.S. EPA's Region I stormwater contact, Thelma Hamilton, at (617) 918-1615 for more information about whether your facility is subject to the regulation and what your permit requirements are. Even if you do not need a permit, you should document why you believe you do not and keep this record in your files.

[1] A Notice of Intent is a one-page document that contains basic information such as the name of your company, its location and where stormwater discharges to.

Self-Assessment: Wastewater

	Yes	No
All Facilities		
1. We have read the Floor Drain Management fact sheet in Appendix F and are in compliance with it.	☐	☐
2. We have determined how stormwater flows on our property, where it discharges and whether we need a federal stormwater permit. ***If your stormwater runs through a conveyance such as a pipe, ditch or swale (either natural or manmade) that discharges directly to a waterway, such as a stream, lake or wetland, or to a larger stormwater collection system (e.g. storm sewer in the street) that eventually discharges to a waterway you could need a federal permit. Please contact U.S. EPA's Region I stormwater contact, Thelma Hamilton, at (617) 918-1615 for more information about whether your facility is subject to the regulation and what your permit requirements are.***	☐	☐
Facilities that Discharge to a Municipal Sewer System		
1. We have obtained permission to discharge (domestic sanitary and/or non-sanitary) from an official at our local wastewater treatment facility.	☐	☐
Facilities that Discharge to an On-site System		
1. If we discharge only domestic sanitary wastewater, the discharge is to a septic system was properly sited, designed, and installed. ***Please contact the Department of Human Services' Division of Health Engineering at (207) 287-5338 for more information.***	☐	☐
2. Our facility is on a septic system and we do not discharge either non-sanitary wastewater or combination sanitary/non-sanitary wastewater without the permission from Maine DEP's Underground Injection Control Program. ***Please contact the Underground Injection Control Program at (207) 287-3901 for more information.***	☐	☐
Discharge to the Ground (Daylighting) of Non-Sanitary Wastewater		
1. If we have floor drains that discharge to ground surface on site, we have obtained permission from Maine DEP's Underground Injection Control Program for the discharge. ***Please contact the Underground Injection Control Program at (207) 287-3901 for more information.***	☐	☐



Pollution Prevention and Best Management Practices

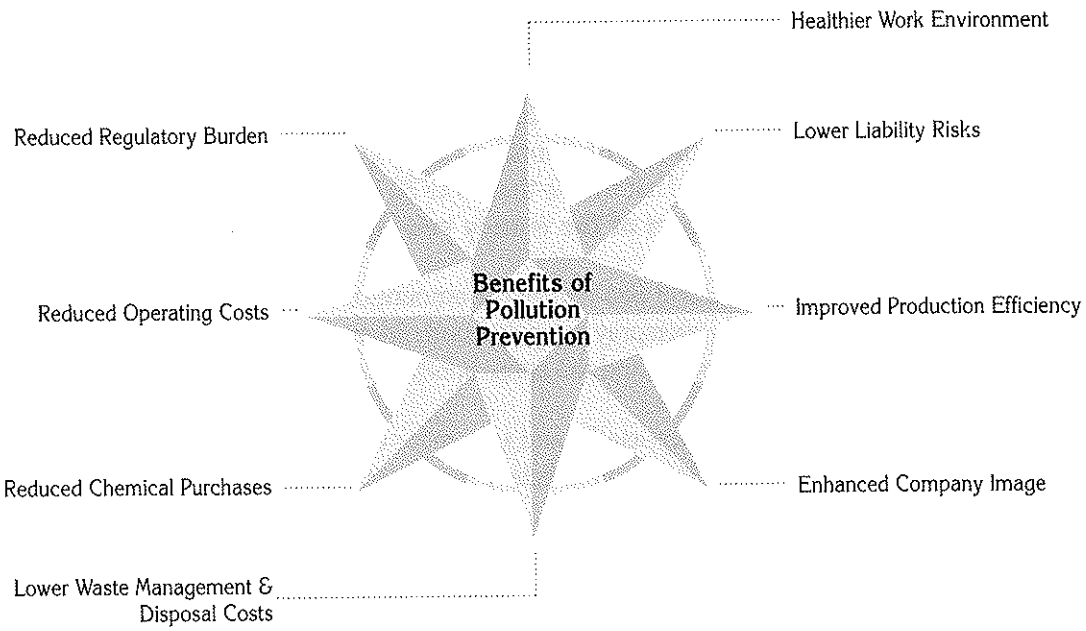
Pollution prevention (P2) is any activity that reduces or eliminates the initial generation of waste at its source - before it becomes a pollutant. Common P2 techniques fall into three categories: substituting less toxic materials; modifying equipment and processes to use smaller quantities of toxic materials; and improving operation and maintenance procedures, including employee training.

By minimizing or eliminating the quantity of waste that your facility generates, you can reduce or eliminate certain regulatory requirements. P2 is easier, cheaper, and more efficient than trying to treat, recycle, or dispose of waste or pollution after it has been created. Therefore, P2 techniques are an important, **cost-effective method of achieving compliance**.

By reducing waste at its source you can:

- Reduce operating and disposal costs,
- Improve worker safety and productivity,
- Ease regulatory compliance burdens, and
- Reduce long-term liability.

Implementing P2 is a smarter, cleaner, safer way to do business!



You may not realize the amount of harmful chemicals that are released into the air when solvent-based coatings are used. If you have a gallon of paint that weighs 8 pounds, and it is 75 percent solvents by weight (i.e., 25 percent solids), then by the time you've used that gallon, 6 pounds of solvents have gone into the air for you, your employees, and your neighbors to breath. Some finishes, such as stains, can contain less than 5 percent solids, so over 95 percent of the original weight of each gallon ends up in the air.

Generally, the most commonly used wood finishing chemicals, such as toluene, xylene, MEK, MIBK, methanol, and methylene chloride can affect the central nervous system. Exposure to these chemicals can cause dizziness, headaches, nausea, confusion, sleepiness, and loss of coordination. These symptoms can decrease productivity and increase injury rates. Long-term effects can include cancer and reproductive problems, or damage to the liver, kidneys or brain. It is unclear whether repeated low-level exposure can impair mental and physical abilities or have serious long-term effects. Until we are certain that exposure to these chemicals is harmless, reducing exposure is the safest approach.

Reducing Air Emissions

The easiest way to reduce air emissions is to reduce the quantity of the coatings you already use. Most likely you can produce the same product with less coating. Becoming more efficient with your coating use will **save you money**. There are two main ways to cut coating use: improve transfer efficiency and increase the solids content of your coatings. If you apply your coatings by dipping or brushing, your transfer efficiency is already high and you can skip the following section on improving transfer efficiency. You should still evaluate increasing the solids content of your coatings. All manufacturers should evaluate alternative coatings such as waterborne or uv-cure.

Improve Transfer Efficiency

Transfer efficiency (TE) is the amount of coating that leaves the spray gun and actually contacts the piece being finished. Traditional air spray guns have a low TE, only 20 to 40 percent under actual line conditions. That means that 60 to 80 percent of the coating used is wasted. In other words, **60 to 80 percent of the money you spend on coatings is probably wasted**.

Improving TE will also reduce the amount of solid and/or hazardous waste you generate. You'll generate less overspray so spray booth filters will last longer, there will be less lacquer dust to clean up and dispose of, and the spray booths themselves will require less frequent cleaning.

How can you increase TE and save more money? You can train operators to use better spray techniques and/or buy more efficient spray guns.

Operator Technique

Spray gun operators control many of the factors that affect TE, including:

- coating flow rate and pressure,
- air flow pressure and velocity,
- distance between spray gun and object,
- width of spray pattern, and
- the neatness of the application.

Proper operator technique can increase TE by up to 20 percent. Proper operator technique includes:

- hold the spray gun perpendicular to the surface of the part being sprayed,
- trigger the gun after each pass,
- overlap each stroke by 50 percent,
- maintain a constant distance between the gun tip and the part,
- spray with a suitable speed,
- adjust the air and fluid pressures at the pressure tank, not by adjusting the gun, and
- select the correct tip size for the coating and gun used.

It is always better to change the gun tip and nozzle size rather than increasing the air and/or fluid pressure. **The correct nozzle and tip size and shape can increase TE by up to 20 percent.** A rule of thumb is that the lower the viscosity of the fluid, the smaller the inner diameter of the fluid tip. Generally, five considerations are involved with selecting the correct gun nozzle and tip:

- type of gun,
- size of object to be coated,
- desired line speed and finish quality,
- type and viscosity of coating, and
- available air volume and pressure.

✸ ***CASE STUDY: Ethan Allen / Old Fort, North Carolina***

Traditionally, spray gun operators were trained on-the-job by a co-worker. Old Fort reevaluated this approach and implemented a more formal training. Benefits of the formal training program included reduced overspray, material use and air emissions, and a higher quality finish. Coating use was reduced by approximately 10 percent.

Source: Case Study: Ethan Allen, Inc., North Carolina Waste Reduction Resource Center, December 1993.

Remember, increasing TE means you **use less coating for the same job and save money**! Ask your equipment supplier to help you determine the correct tip and nozzle size, the correct equipment settings, and the best operator technique for your production process. Then make sure that your operator is always using the correct settings and techniques. Some manufacturers evaluate spray technique and coating use when determining pay incentives and raises.

Proper spray gun setting and operator technique can improve finish quality on the first try, reducing the need for rework. In addition, operators typically perform their own line, gun and spray booth cleaning, so training can reduce the use of cleaning solvents as well.

More Efficient Spray Guns

High volume low pressure (HVLP) spray guns have a TE of 40 to 60 percent in practice. This means that about half the amount of coating is needed to coat the same object when a conventional air spray gun is replaced by a HVLP gun. In addition to reducing overspray, HVLP guns generate less coating bounceback, reducing operator exposure to potentially harmful solvents.

HVLP guns are portable and easy to clean. They provide good coverage and performance, and are good at penetrating recessed areas. HVLP guns cost approximately $300 to $600 and can pay for themselves in just a few weeks or months through reduced coating use. There can be a significant variation in TE among different HVLP gun manufacturers, so it is important to test guns from several different manufacturers.

✸ ***CASE STUDY: Ethan Allen / Beecher Falls, Vermont***

Beecher Falls replaced their remaining conventional air spray guns with HVLP guns and realized a 39 percent reduction in the quantity of coating sprayed from the new guns, for a payback period of 3 weeks.

Source: The complete text of the Beecher Falls Case Study can be obtained from NEWMOA at (617) 367-8558.

High Solids Coatings

Traditional nitrocellulose-based sealers and topcoats are 25 percent solids or less, meaning that 75 percent or more of the coating you purchase evaporates and is wasted even if your TE is 100 percent! Low solids content combined with typical spray gun TEs means that **only a small percentage of the coating you buy actually remains on your finished piece**. For example, a 25 percent solids coating applied with a TE of 25 percent means that only 6 percent of the original gallon of coating remains on your finished piece and 94 percent is wasted to evaporation and overspray. One way to reduce this waste is to raise the solids content of the coatings you use. Their are numerous benefits to increasing the solids content to 35 percent or more:

- facilities that have increased solids content report that the final product is of higher quality and appeal to customers;
- one application can place twice the solids on an item, so fewer finishing steps are needed to produce the same final product;
- although on a per-gallon basis high solids coatings might be more expensive, less is needed so overall costs are the same or lower;
- harmful air emissions could be reduced by 50 percent or more; and
- application technique, repair and cleanup requirements are similar to traditional low-solids coatings.

✸ ***CASE STUDY: Ethan Allen / Beecher Falls, Vermont***

The Beecher Falls plant makes several styles of high-quality bedroom and living room furniture. Beecher Falls switched to 35 percent solids sealer and topcoat. One topcoat application instead of two is needed, reducing topcoat use and associated HAP and VOC emissions by approximately 55 and 28 percent, respectively, and saving the labor of the two spray operators and two sanders associated with the second coat.

Source: The complete text of the Beecher Falls Case Study can be obtained from NEWMOA at (617) 367-8558.

Alternative Coatings

What better way to avoid all the regulatory requirements, potential health effects, and risks of fire and future environmental liability associated with the use of a solvent-based finishing system than to switch to a different type of coating?

Several firms in New England and throughout the country have successfully switched to water-borne coatings. You may have heard mixed reviews or complaints about waterborne coatings in the past. However, the finish look and performance of waterborne coatings have improved dramatically in just the past couple of years, and they are worth investigating for yourself today.

✸ ***CASE STUDY: New England Woodcraft / Forest Dale, Vermont***

New England Woodcraft manufactures oak and cherry furniture for the military, college and retail markets. Following a fire that destroyed their plant, they switched to acrylic water-based emulsion sealers and topcoats. VOC emissions were reduced by over 80 percent, despite the doubling of production. Hazardous waste generation was cut from 2 55-gallon drums per week to only 3 drums per year. Fire insurance premiums were also cut in half.

The conversion process was time and resource intensive, requiring extensive pilot testing. However, New England Woodcraft's owner believes "...the economics of the two coating systems may be a wash. The water-based formulations cost more per gallon than nitrocellulose, but you get more mileage out of them; their solids content is higher. We'll also save on insurance and any future taxes on VOCs. And how are you going to put a price on employee health and attitude?"

Sources: "Getting the Most from Water-based Finishes," Furniture Design & Manufacturing, January 1991 and "Environmentalism Pays Off for Brandon Company," Rutland Herald, April 17, 1996.

There are many benefits associated with waterborne coatings:

- solids content is often higher so overall cost is the same or less than solvent-based coatings;
- finish is more durable than solvent-based coatings;
- cleanup uses soap and water;
- low flammability means there are no restrictions on storage, no explosion hazards, and lower fire insurance premiums; and
- waterborne coatings emit substantially fewer toxins, so large ventilation air flows are not needed, saving you money on utilities, especially in the winter.

CASE STUDY: Moot Wood Turnings / Northfield, Vermont

Moot Wood Turnings manufactures custom wood products and components that have a single finishing coat. Although some lacquer is applied by spraying or tumbling, approximately 90 percent is dip-coated. Primarily for safety reasons, the company switched to water-based lacquer.

The benefits include:

- **harder, more resistant finish;**
- **toxic solvent content decreased from over 50 percent to less than 15 percent and HAPs were eliminated from the new formulation;**
- **water-based lacquer is not flammable so no restrictions on storage, and fire insurance rates decreased;**
- **60-70 percent reduction in hazardous waste generation offsets increased per-gallon cost of coating; and**
- **$800 per year savings in fees associated with reporting required under Tier II Community Right-to-Know.***

*For more information about Tier II Community Right-to-Know requirements, contact the U.S. EPA Region I Small Business Ombudsman at (617) 565-3230.

Source: Vermont Agency of Natural Resources, Environmental Assistance Division, 1998.

CASE STUDY: J.K. Adams Company / Dorset, Vermont

J.K. Adams manufactures wooden housewares, such as cutting boards and knife storage racks. They have successfully switched approximately 75 percent of their coatings to waterborne formulations that are applied with HVLP guns. J.K. Adams has also installed an innovative new spraybooth that contains reusable filters made of high density polyethylene.

The changeover to waterborne coatings took several years of working with coating suppliers, equipment vendors and customers. However, by switching to waterborne coatings, J.K. Adams was able to avoid the need to obtain an operating permit from the state air pollution control program and they should be able to lower hazardous waste generation to Conditionally Exempt Generator (CEG) status.

Source: Vermont Agency of Natural Resources, Environmental Assistance Division, 1999.

Several manufacturers in New England and throughout the country have also successfully switched some of their finishing to **ultra violet (UV)-cured coatings**. UV-cured coatings are typically applied using an automated system and therefore are most applicable to finishing flat wood, such as furniture components prior to assembly.

CASE STUDY: Vermont Tubbs / Brandon, Vermont

Vermont Tubbs Inc. manufactures bedroom furniture in ash, cherry and maple. In 1999, they installed an automated UV-curing roll coating system to finish solid wood drawer components. Prior to the switch, these components were spray coated with a nitrocellulose lacquer that contained almost 4 pounds of VOCs per gallon. The UV-cured system is expected to cut overall VOC emissions from the facility by approximately 10,000 pounds per year. This is particularly important to Vermont Tubbs because they are experiencing significant growth and were approaching the VOC emission limit set in their state air permit to operate.

In addition to the environmental benefits, Vermont Tubbs sees several other advantages associated with the UV-cured system:

- **UV-cured coating is more durable and has a higher film thickness**
- **labor requirements are reduced**
- **floorspace requirements for drying boards are significantly reduced**

The capital cost to purchase and install the new system was approximately $150,000. However, Vermont Tubbs estimates that labor and material costs have been reduced from $1.50 per unit to just $0.60 per unit.

Source: Vermont Agency of Natural Resources, Environmental Assistance Division, 1999.

There are many benefits to using a UV-cured coating system:

- full curing occurs within seconds of exposure to UV lights, enabling fast production rates and eliminating the need for flashoff space
- VOC and HAP emissions are virtually eliminated, reducing or eliminating regulatory burdens
- fire and explosion hazards are eliminated, reducing insurance costs
- ventilation requirements are lower, reducing utility costs
- the as-applied coating cost can be lower
- UV-cured coatings are extremely durable
- UV-cured coatings will not cure unless exposed to UV light, reducing cleanup requirements.

CASE STUDY: Great Brook Furniture / North Springfield, Vermont

Great Brook Furniture (GBF) manufactures furniture and furniture components from various hard and soft woods, and also from medium density fiberboard. In 1998 they installed an automated UV-cure roll coating system to finish flat panel wood products. The system does not create overspray and has no filters. Therefore, hazardous waste generation has been significantly reduced. The new system cost approximately $145,000. However, GBF expects to recoup this investment after only 2 years because of the increased production capacity, and the reductions in labor requirements, overall coating cost and hazardous waste generation.

Source: Vermont Agency of Natural Resources, Environmental Assistance Division, 1999.

Your vendor might suggest that you switch to so-called "compliant coatings" as a way to avoid air regulations. However, many of the chemicals in "compliant coatings," including acetone, are Chapter 137 air toxics and subject to regulation under Maine's Air Toxics Program. **Switching to so-called "compliant coatings" does not automatically mean that you do not have any regulatory obligations** or that the coatings are non-toxic. For example, "compliant coatings" are often formulated using acetone. Exposure to acetone can be harmful to human health. Acetone is also more flammable than many other solvents, increasing fire and explosion hazards and most likely, fire insurance rates as well. Acetone is more volatile than most other solvents, creating potential quality problems because the coating dries too quickly. Furthermore, the smell of acetone is not pleasant for employees. **Just because a coating is called a "compliant coating," that does not necessarily mean it is a safe-to-use coating.**

Reducing Hazardous Waste

Some of the best ways to reduce your generation of hazardous wastes were presented in the Reducing Air Emissions section. When spray guns are used, improving operator technique and equipment settings, and/or buying more efficient application equipment will reduce the amount of overspray generated. When you reduce overspray, you lengthen the life of spray booth filters, generate less lacquer dust, and generally use less cleaning solvents. No matter which application technique is used at your facility, spray gun, dipping or brushing, **switching to an alternative coating, such as waterborne or UV-cure can often reduce hazardous waste generation**.

CASE STUDY: T. Copeland & Sons / Bradford, Vermont

T. Copeland & Sons manufactures maple and cherry bedroom and office furniture. They were able to reduce hazardous waste generation and become a Conditionally Exempt Generator (CEG) even though production has steadily increased. In addition to switching to higher solids coatings and HVLP spray guns, T. Copeland & Sons implemented the following improvements:

- **purchasing a closed-system gun washer that reduced waste solvent generation by over 65%**
- **providing ongoing training to operators to maximize the efficiency of the HVLP guns when coating formulations change**
- **experimenting with fluid nozzle and air caps to minimize overspray, reducing this wastestream by over 320 pounds a year**
- **reusing approximately 85% of the coating remaining in the pressure pot from the previous day by adding an equal or greater amount of uncatalyzed virgin material**
- **having a qualified laboratory perform waste profile testing on certain overspray materials that determined that the material did not exceed regulatory thresholds for ignitability and certain toxics and, therefore, could be managed as a solid waste**

Source: Vermont Agency of Natural Resources, Environmental Assistance Division, 1999.

There are other ways to reduce solid and/or hazardous waste generation, including:

- implement an inventory control system, and
- collect and reuse cleaning solvents.

Inventory Control System

Controlling the purchasing and handling of materials can reduce waste generation significantly. When you develop a log out system and assign one person the responsibility of retrieving needed materials from your storage area, you can track where materials are used and in what quantities. In addition, operators become less wasteful in their use of materials when they don't have open access to the storage area and they know someone is recording material use.

Coatings that have passed their expiration date become a waste and should not be used. Therefore, you should purchase coatings in as small a quantity as possible to avoid exceeding expiration dates. You should also label incoming materials with shelf life dates and have a first-in, first-out policy. Lastly, you should work with your supplier(s) to take back off-spec and empty containers, if possible.

Solvent Reuse

When spray gun application is used, spent cleaning solvents are generated from gun and line cleaning, and spray booth cleaning. Solvents are also used for cleaning when coatings are applied by brushing and dipping. Most spent solvents are a listed hazardous waste (F001, F002, F003, F004 or F005). You might think the cheapest and easiest thing to do is simply let the solvents evaporate. However, evaporation is a prohibited form of hazardous waste treatment and is illegal. In addition, evaporation releases harmful chemicals into the air for you, and your employees and neighbors to breath, and you are wasting a valuable resource. Collecting and reusing solvents as much as possible can lower virgin solvent purchases and hazardous waste disposal costs for spent solvents. A small distillation unit can produce recycled solvent that is appropriate for use in a variety of applications.

✸ ***CASE STUDY: Rocky Mountain Furniture Restoration / Bozeman, Montana***

Rocky Mountain reduced consumption and disposal of thinners and strippers through the use of a solvent distillation unit. Payback was only seven months and the company now saves $3,500 -$4,000 per year on new solvent and waste disposal costs.

Source: Pollution Prevention for Montana Wood Finishers, Montana Pollution Prevention Program, September 1997

CASE STUDY: Hussey Seating / North Berwick, Maine

Hussey uses adhesives to aid in attaching fabric to chair seats and backs during the upholstery operation. Hussey also makes wooden seats and backs by gluing several thin pieces of wood together. Traditionally, all of the adhesives used at the facility were solvent-based. These contributed to Hussey's VOC and HAP emissions, as well as potential air quality problems within the plant.

In 1995, Hussey switched all of the adhesives used at the plant to polyvinyl acetate (PVA) glues. No air emission or safety concerns are associated with the new adhesives. In addition, the glue manufacturer takes back all the waste glue and cleanup rinse water to use in their production process. Therefore, Hussey no longer has any glue or rinse wastewater disposal issues or costs.

Source: The complete text of the Hussey Seating Case Study can be obtained from NEWMOA at (617) 367-8558.

Appendices

A. ***List of 188 Hazardous Air Pollutants***

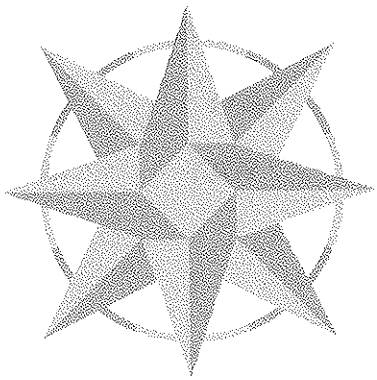
B. ***Chapter 137 Pollutant Use Calculations***

C. ***Potential to Emit Calculations***

D. ***Hazardous Waste Manifest Form***

E. ***Hazardous Waste Notification Form***

F. ***Floor Drain Management Fact Sheet***



Acronyms

DEP:	Maine Department of Environmental Protection
HAP:	Hazardous Air Pollutant
HVLP:	High Volume Low Pressure
MEK:	Methyl Ethyl Ketone
MIBK:	Methyl Isobutyl Ketone
MSDS:	Material Safety Data Sheet
MWPA:	Maine Wood Products Association
NEWMOA:	Northeast Waste Management Officials' Association
SBTAP:	Small Business Technical Assistance Program
SQG:	Small Quantity Generator
P2:	Pollution Prevention
TE:	Transfer Efficiency
TSDF:	Transfer, Storage, Disposal Facility
U.S. EPA:	United States Environmental Protection Agency
UV:	Ultraviolet
VOC:	Volatile Organic Compound

Section 112(b) List of HAPS

Appendix A

CAS Number	Chemical Name
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
10713	Acrylonitrile
107051	Allyl chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including benzene from gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
105602	Caprolactam (delisted on 6/18/96)
133062	Captan
63252	Carbaryl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresols/Cresylic acid (isomers and mixture)
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene
94757	2,4-D, salts and esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
106467	1,4-Dichlorobenzene(p)
96128	1,2-Dibromo-3-chloropropane
84742	Dibutylphthalate
91941	3,3-Dichlorobenzidene
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Diethyl aniline (N,N-Dimethylaniline)
64675	Diethyl sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl aminoazobenzene
119937	3,3¬-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	1,1-Dimethyl hydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol, and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (l-Chloro-2,3-epoxypropane)
106887	1,2-Epoxybutane
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Aziridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (all isomers)
108316	Maleic anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)

CAS Number	Chemical Name
71556	Methyl chloroform (1,1,1-Trichloroethane)
78933	Methyl ethyl ketone (2-Butanone)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	4,4-Methylene bis(2-chloroaniline)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocyanate (MDI)
101779	4,4¬-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Aroclors)
1120714	1,3-Propane sultone
57578	beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2-Dichloropropane)
75569	Propylene oxide
75558	1,2-Propylenimine (2-Methyl aziridine)
91225	Quinoline
106514	Quinone
100425	Styrene
96093	Styrene oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium tetrachloride
108883	Toluene
95807	2,4-Toluene diamine
584849	2,4-Toluene diisocyanate
95534	o-Toluidine
8001352	Toxaphene (chlorinated camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl acetate
593602	Vinyl bromide
75014	Vinyl chloride
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (isomers and mixture)
95476	o-Xylenes
108383	m-Xylenes
10642	p-Xylenes
0	Antimony Compounds
0	Arsenic Compounds (inorganic including arsine)
0	Beryllium Compounds
0	Cadmium Compounds
0	Chromium Compounds
0	Cobalt Compounds
0	Coke Oven Emissions
0	Cyanide Compounds1
0	Glycol ethers2
0	Lead Compounds
0	Manganese Compounds
0	Mercury Compounds
0	Fine mineral fibers3
0	Nickel Compounds
0	Polycylic Organic Matter4
0	Radionuclides (including radon)5
0	Selenium Compounds

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

Appendix B: Chapter 137 Pollutant Use Calculations

How to Determine Your Chapter 137 Pollutant Use

① The first step is to **gather your Material Safety Data Sheets (MSDS)** for all coating, gluing, washoff and cleaning materials used at your facility. The MSDS for a solventborne *Compliant Sealer* is attached at the end of this appendix for reference throughout this section. You may want to refer to the "A Quick Guide to Reading a Material Data Safety Sheet" also at the end of this appendix for a brief overview of what type of information is contained in each section of an MSDS.

② Review each MSDS to **determine whether any Chapter 137 pollutants** are in any of the materials you use (the list of Chapter 137 pollutants is contained at the end of this appendix). Make a list of all of the different Chapter 137 air toxics present in all of the materials you use. You may want to fill out a table similar to the one included in this appendix to help you keep track of the information. For example, the *Compliant Sealer* contains 6 different Chapter 137 air toxics: acetone, ethyl benzene, isopropyl alcohol, n-butyl acetate, toluene and xylene. You need to complete this step for *each* material you use.

③ **Determine the total number of gallons** of each material you use in a year. For example, let's say you use 8 gallons per day of the *Compliant Sealer*. There are an average of 250 work days per year[5] so that is 2,000 gallons of *Compliant Sealer* each year (8 x 250 = 2000). If you don't have daily coating use records, you can use monthly or yearly purchase or use records. You need to repeat this step for *each* material you use.

④ Choose a Chapter 137 pollutant from the list developed in Step 2 and gather all the MSDSs for materials that contain that compound. Then look at Section 2 or 3 of each of the MSDSs to find the **percentage of the chosen Chapter 137 pollutant (by weight) and coating density** (total weight of one gallon)[1] for each of your materials. For example, if we chose xylene, then for the *Compliant Sealer*, the Chapter 137 pollutant percentage by weight is found on page 1 in Section II-A: xylene is 11.93% by weight. The coating density is found on page 2 in Section III and is 8 pounds per gallon. You need to repeat this step for *each* material you use.

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5 Assumes: (5 days per week x 52 weeks per year) - 10 holidays = 250 work days per year

1 Note: Sometimes the coating supplier lists specific gravity instead of coating density. You calculate the coating density in pounds per gallon by multiplying the specific gravity by 8.34 (the weight of a pound of water). If the specific gravity listed on the MSDS uses a reference other than water, you need to use the density of that reference compound. Unless specified otherwise, you should assume that the specific gravity reference is water.

Example: if Specific Gravity = 0.96
then the coating density = 0.96 x 8.34 pounds/gallon = 8 pounds/gallon

⑤ For the Chapter 137 pollutant you chose in Step 4, xylene for example, **determine the emissions of *that* Chapter 137 pollutant from *each* coating** in a year using the following formula:

Formula:

Chapter 137 pollutant = Gallons$_{(year)}$ x Density x (%Chapter 137 pollutant/100)

Where:

Chapter 137 pollutant = The Chapter 137 pollutant emissions from the material (in pounds/year)
Gallons$_{(year)}$ = The number of gallons used in a year
Density = The density (total weight) of the material in pounds per gallon.
%Chapter 137 pollutant=The percentage (by weight) of the Chapter 137 pollutant contained in the material.

***Compliant Sealer* Example for xylene:**

Chapter 137 pollutant = 2,000 gallons per year x 8 pounds per gallon x (11.93/100) =
1,909 pounds of xylene per year from the *Compliant Sealer*

You need to repeat this calculation for *each* material you use that contains the Chapter 137 pollutant chosen in Step 4.

⑥ For the Chapter 137 pollutant chosen in Step 4, you need to add up all of the yearly use calculations you developed in Step 5 (you should have a calculation for each material that contains the chosen Chapter 137 pollutant, xylene for example). Then **compare that total to the reporting threshold** listed in the regulations. For example, the reporting threshold for xylene is 2,000 pounds per year.

Note: It is not difficult for a small- to medium-sized facility to exceed a reporting threshold of 2,000 pounds per year. At an actual use of just 8 gallons per 8 hour day, the *Compliant Sealer* alone contributes 1,909 pounds of xylene - almost reaching the threshold by itself! And this example coating is a "compliant" sealer - many sealers contain higher concentrations of Chapter 137 pollutants. In addition, most facilities apply more than one coating - therefore, even if you use less than 8 gallons per day of sealer, you could still exceed the 2,000 pounds per year threshold when all your materials are added together.

⑦ Then you need to choose another Chapter 137 pollutant from the list you developed in Step 2 and begin the process again at Step 4. You must repeat this process (Steps 4, 5 and 6) until you have evaluated **each of the different Chapter 137 pollutants** you use at your facility.

NOTE: If you exceed the reporting threshold for even one Chapter 137 pollutant, you should contact the Air Toxics Program at (207) 287-2437 to determine your obligations.

Example Table for Chapter 137 Pollutant Calculation Information

Chapter 137 pollutant name	List of materials containing that Chapter 137 pollutant	Number of gallons used in 8 hours	Weight of material (lbs./gallon)	% Chapter 137 pollutant (by weight)	Pounds of Chapter 137 pollutant used in year	Reporting threshold (lbs. / year)
Example: xylene	*Compliant Sealer*	8	8	11.93	1,909	
	Another coating					
	Another coating					
Total for xylene						2,000

Where: Pounds Chapter 137 pollutant used in year =

(gallons material used in year) X (weight of material) X (%Chapter 137 pollutant/100) =

Column 3 x Column 4 x (Column 5÷100)

A Quick Guide to Reading a Material Safety Data Sheet

The information provided in the table below should help you to understand how a Material Safety Data Sheet (MSDS) is formatted and what kind of information it contains. It is always a good idea to ask vendors for a copy of an MSDS for a chemical or product BEFORE actually purchasing the product. This will allow you to evaluate the product and compare it to others that perform a similar function. By doing this you can select the product or chemical that represents the least hazard to your employees and will result in the least amount of regulation.

What is This Stuff?	
Section I: Product Identity	Allows you to match the MSDS with the product.
Section II: Hazardous Ingredients	Names the hazardous ingredients and tells you the maximum amount you can be exposed to without harm.
How Does This Chemical Behave?	
Section III: Physical Data	Helps to figure out where to store the chemical and how likely it is to evaporate and give off vapors (leading to exposure and/or fires).
Is This Product Dangerous?	
Section IV: Fire and Explosion Data	Discusses when a chemical will ignite and how to extinguish the fire.
Section V: Reactivity Data	Tells you if the substance will explode or breakdown in the presence of sunlight or air.
Can This Product Hurt My Health?	
Section VI: Health Hazards Data	Tells you how the chemical can get into your body (e.g. absorbed through the skin, inhalation, etc.) Explains what the health effects may be if you are exposed and whether it can cause cancer. It also includes first aid procedures.
How Should I Work With This Stuff?	
Section VII: Precautions for Handling	What to do in case of a spill. How to dispose of the waste.
How Should I Be Protected?	
Section VIII: Control Measures	Includes respirators, ventilation, eye protection, or special clothing.

*** MATERIAL SAFETY DATA SHEET ***

date of prep : 02/23/99 44773 (page 1)

SECTION I

manufacturer : C.E. BRADLEY LABORATORIES, INC.
address : P.O. BOX 8238
N. BRATTLEBORO, VT 05304
RICHARD S. CARLSON, CHIEF CHEMIST
telephone# : (802) 257-7971
emergency# : (802) 257-7971

- H M I S -

HEALTH	: 1
FLAMMABILITY	: 3
REACTIVITY	: 1
PERSONAL PROTECT.	: H

product class: F00
mfg. code id : 44773
trade name : COMPLIANT SEALER (44773)

(HAZARD RATING : 0=least, 1=slight, 2=moderate, 3=high, 4=extreme, *=chronic)
(H = splash goggles, gloves, synthetic apron, & vapor respirator)

SECTION II-A HAZARDOUS COMPONENTS

no.	component	CAS#	% by wt.	HAPS	SARA	vapor pressure (mm Hg @ 20C)	LEL (@ 25C)
1	2-HEPTANONE	110-43-0	20.74	NO	NO	2.14	1.11 @ 65 C
2	nBUTYL ACETATE(ACETIC ACID,BUTYL ESTER)	123-86-4	12.33	NO	NO	10.00	1.38 @ 38 C
3	NITROCELLULOSE	9004-70-0	12.93	NO	NO	N/A	N/A
4	ISOPROPYL ALCOHOL	67-63-0	5.54	NO	NO	30.00	N/A
5	XYLENE	1330-20-7	11.93	YES	YES	6.60	1.00
6	ETHYL BENZENE	100-41-4	3.02	YES	YES	5.40	1.00
7	TOLUENE (BENZENE,METHYL-)	108-88-3	4.76	YES	YES	24.00	1.00
8	ACETONE (2-PROPANONE)	67-64-1	9.68	NO	NO	181.70	N/A

>> None of the components of this product are recognized as carcinogenic.
>> Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372, chemicals listed on the Section 313 List (40 CFR Part 373.65) are identified under the heading 'SARA 313'.

(N/A = not applicable)

SECTION II-B — OCCUPATIONAL EXPOSURE LIMITS

no.	(OSHA) PEL/TWA	PEL/CEILING	PEL/STEL	skin
1	100 ppm	N/E	N/E	N/E
2	150 ppm	N/E	N/E	N/E
3	N/E	N/E	N/E	N/E
4	400 ppm	N/E	N/E	N/E
5	100 ppm	N/E	150 ppm	N/E
6	100 ppm	N/E	N/E	N/E
7	100 ppm	N/E	150 ppm	N/E
8	750 ppm	N/E	N/E	N/E

no.	(ACGIH) TLV/TWA	TLV/CEILING	TLV/STEL	skin
1	50 ppm	N/E	N/E	N/E
2	150 ppm	N/E	200 ppm	N/E
3	N/E	N/E	N/E	N/E
4	400 ppm	N/E	500 ppm	N/E
5	100 ppm	N/E	150 ppm	N/E
6	100 ppm	N/E	125 ppm	N/E
7	100 ppm	N/E	150 ppm	N/E
8	750 ppm	N/E	1000 ppm	N/E

>> The dried film of this product may become a dust nuisance when removed by sanding, blasting or grinding.
>> (SKIN) absorption may contribute to the overall exposure to this material. Take appropriate measures to prevent skin contact.
(N/E = not established)

SECTION III — PHYSICAL DATA

boiling point	: not established	% volatile by volume	: 77.82 +/- 2%
evaporation rate	: <1 (ether = 1)	% volatile by weight	: 68.00 +/- 2%
vapor density	: >1 (air = 1)	weight per gallon	: 8.00 +/- .2
VOC	: 5.2861	VOC (Exempt)	: 4.6655

SECTION IV — HEALTH INFORMATION

EYE CONTACT

BASED ON THE PRESENCE OF COMPONENT 4 PRODUCT IS PRESUMED TO BE SEVERELY IRRITATING TO THE EYES. EXPOSURE MAY CAUSE EXTENSIVE CORNEAL INJURY. BASED ON THE PRESENCE OF COMPONENTS 2, 4, 5, 6, 7 AND 8 PRODUCT VAPORS MAY ALSO BE IRRITATING TO THE EYES.

SKIN CONTACT

BASED ON THE PRESENCE OF COMPONENTS 5 AND 7 PRODUCT IS PRESUMED TO BE MODERATELY IRRITATING TO THE SKIN. PROLONGED CONTACT MAY CAUSE DAMAGE TO THIE SKIN. BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 5, 6, 7 AND 8 PROLONGED OR REPEATED CONTACT MAY RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN DERMATITIS.

INHALATION

EXPOSURE MAY PRODUCE IRRITATION TO THE NOSE, THROAT, RESPIRATORY TRACT, AND OTHER MUCOUS MEMBRANES. BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 5, 6, 7 AND 8 EXPOSURE TO HIGH CONCENTRATIONS OF VAPOR MAY PRODUCE CNS DEPRESSION.

INGESTION

BASED ON THE PRESENCE OF COMPONENT 8 PRODUCT IS PRESUMED TO BE MODERATELY TOXIC. BASED ON THE PRESENCE OF COMPONENT 8 INGESTION MAY CAUSE POSSIBLE KIDNEY DAMAGE. BASED ON THE PRESENCE OF COMPONENTS 5, 6 AND 7 SMALL AMOUNTS OF THE LIQUID ASPIRATED INTO THE LUNGS DURING INGESTION OR FROM VOMITING MAY RESULT IN SEVERE LUNG DAMAGE.

SIGNS AND SYMPTOMS

SYMPTOMS OF EYE IRRITATION INCLUDE PAIN, TEARING, REDDENING AND SWELLING. SYMPTOMS OF SKIN IRRITATION INCLUDE REDDENING, SWELLING, RASH AND REDNESS. SYMPTOMS OF RESPIRATORY IRRITATION INCLUDE RUNNY NOSE, SORE THROAT, COUGHING, CHEST DISCOMFORT, SHORTNESS OF BREATH AND REDUCED LUNG FUNCTION. SYMPTOMS OR GASTROINTESTIONAL IRRITATION INCLUDE SORE THROAT, ABDOMINAL PAIN, NAUSEA, VOMITING AND DIARRHEA. BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 5, 6, 7 AND 8 CENTRAL NERVOUS SYSTEM DEPRESSION MAY BE EVIDENCED BY HEADACHE, DIZZINESS, NAUSEA AND SYMPTOMS OF INTOXICATION; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING SKIN, EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LIVER FUNCTIONS FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. BASED ON THE PRESENCE OF COMPONENT 4 PREEXISTING SKIN OR LUNG ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING INCREASED ALLERGY SYMPTOMS FROM EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

NONE RECOGNIZED.

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT

IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. SEEK PROMPT MEDICAL ATTENTION.

SKIN CONTACT

IMMEDIATELY REMOVE CONTAMINATED CLOTHING AND SHOES. WIPE EXCESS FROM SKIN AND FLUSH WITH WATER FOR AT LEAST 15 MINUTES USING SOAP IF AVAILABLE. SEEK PROMPT MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL THOROUGHLY DECONTAMINATED.

INHALATION

REMOVE VICTIM TO FRESH AIR AND TREAT SYMPTOMATICALLY. PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF THE VICTIM IS NOT BREATHING. SEEK PROMPT MEDICAL ATTENTION.

INGESTION

DO NOT INDUCE VOMITING. IF VOMITING SPONTANEOUSLY OCCURS, KEEP THE VICTIM'S HEAD BELOW THE HIPS TO PREVENT ASPIRATION INTO THE LUNGS. SINCE ASPIRATION INTO THE LUNGS CAN CAUSE VERY SERIOUS, PERMANENT DAMAGE, THE DECISION OF WHETHER TO INDUCE VOMITING OR NOT SHOULD BE MADE BY A PHYSICIAN. DANGER FROM LUNG ASPIRATION MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING EMPTYING THE STOMACH. CONSULT A PHYSICIAN, HOSPITAL OR POISON CONTROL CENTER AND/OR TRANSPORT TO AN EMERGENCY FACILITY IMMEDIATELY.

>> COMPONENTS 4 AND 8 PRODUCT IS PRESUMED TO BE TOXIC AND THE PROPER FIRST AID IS TO INDUCE VOMITING.
>> COMPONENT 6 PRODUCT MAY CAUSE SEVERE, PERMANENT DAMAGE IF ASPIRATED AND VOMITING SHOULD NOT BE INDUCED.

SECTION VI FIRE AND EXPLOSION HAZARDS

flammability classification - OSHA : FLAMMABLE LIQUID - CLASS IB
- DOT : FLAMMABLE LIQUID PACKING GROUP III

flash point : -4 F TCC

EXTINGUISHING MEDIA

USE WATER FOG, FOAM, DRY CHEMICAL OR CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

WARNING. EXTREMELY FLAMMABLE. CLEAR FIRE AREA OF UNPROTECTED PERSONNEL. DO NOT ENTER CONFINED FIRE SPACE WITHOUT HELMET, FACE SHIELD, BUNKER COAT, GLOVES, RUBBER BOOTS, AND A POSITIVE PRESSURE NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS

CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE. GROUND CONTAINERS WHILE POURING AND LIMIT FREE FALL TO A FEW INCHES TO PREVENT STATIC SPARKS. AVOID SPONTANEOUS COMBUSTION OF CONTAMINTED RAGS AND OTHER EASILY IGNITABLE ORGANIC ACCUMULATIONS (SUCH AS SPRAY BOOTH RESIDUES) BY IMMEDIATE IMMERSION IN WATER.

SECTION VII — REACTIVITY

STABILITY : STABLE

HAZARDOUS POLYMERIZATION : WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID

BASED ON THE PRESENCE OF COMPONENTS 1, 2, 4, 5, 6, 7 AND 8 AVOID OXIDIZING MATERIALS.

HAZARDOUS DECOMPOSITION PRODUCTS

CARBON DIOXIDE, CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.

SECTION VIII — EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. IF EXPOSURE EXCEEDS TLV USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE.

PROTECTIVE CLOTHING

AVOID CONTACT WITH EYES. WEAR GOGGLES IF THERE IS A LIKELIHOOD OF CONTACT WITH EYES. DO NOT GET ON SKIN OR ON CLOTHING.

ADDITIONAL PROTECTIVE MEASURES

USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR USE IN AN EMERGENCY.

SECTION IX — ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

LARGE SPILLS >> EVACUATE THE HAZARD AREA OF UNPROTECTED PERSONNEL. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. IF VAPOR CLOUD FORMS, WATER FOG MAY BE USED TO SUPPRESS; CONTAIN RUN-OFF. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTIONS AS ABOVE. SMALL SPILLS >> TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS; SEAL TIGHTLY FOR PROPER DISPOSAL.

WASTE DISPOSAL

REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

SECTION X — ADDITIONAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS, AND FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER POSSIBLE SOURCES OF IGNITION PRIOR TO USE AND UNTIL VAPORS ARE GONE. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM HANDLING SITE.

CONTAINERS CAN CONTAIN HAZARDOUS PRODUCT RESIDUES EVEN WHEN EMPTY. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, OR USING TOILET FACILITIES. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILLATION. CONTAINER, EVEN IF EMPTY, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, OR WELD NEAR CONTAINERS.

THE DATA SET FORTH IN THIS SHEET ARE BASED ON INFORMATION PROVIDED BY THE SUPPLIERS OF THE RAW MATERIALS AND CHEMICALS USED IN THE MANUFACTURE OF THE AFFOREMENTIONED PRODUCT. C.E.BRADLEY MAKES NO WARRANTY, EXPRESS OR IMPLIED WITH RESPECT TO THE ACCURACY OF THE INFORMATION PROVIDED BY THEIR SUPPLIERS, AND DISCLAIMS ALL LIABILITY OF RELIANCE THEREOF. C.E.BRADLEY LABORATORIES, INC. WARRANTS ONLY THAT ITS PRODUCTS CONFORM WITH THEIR PUBLISHED SPECIFICATIONS, AND NO OTHER EXPRESS WARRANTY IS MADE WITH REGARD THERETO. WE DO NOT GUARANTEE FAVORABLE RESULTS AND WE ASSUME NO LIABILITY IN CONNECTION WITH THE USE OF THE PRODUCTS. THEY ARE INTENDED FOR USE BY PERSONS HAVING TECHNICAL SKILL AND KNOWLEDGE, AT THEIR OWN DISCRETION AND RISK.

List of Chapter 137 Pollutants

THRESHOLD FOR REPORTING IS 2000 POUNDS UNLESS LESSER AMOUNT IS SPECIFIED IN BOLD FONT IN RIGHT COLUMN.

CASNUM	POLLUTANT	lbs
0075070	**ACETALDEHYDE**	**200**
0060355	ACETAMIDE	
0108247	ACETIC ANHYDRIDE	
0067641	ACETONE	
0075058	ACETONITRILE	
0098862	ACETOPHENONE	
0053963	2-ACETYLAMINOFLUORENE	
0107028	ACROLEIN	
0079061	ACRYLAMIDE	
0079107	ACRYLIC ACID	
0107131	ACRYLONITRILE	
0107051	ALLYL CHLORIDE	
ALUMCOMP	ALUMINUM FUME OR DUST	
0092671	4-AMINOBIPHENYL	
7664417	AMMONIA	
0062533	ANILINE	
0090040	O-ANISIDINE	
ANTICOMP	ANTIMONY & ANTIMONY COMPOUNDS	
ARSECOMP	**ARSENIC & ARSENIC COMPOUNDS (ALSO INORGANIC ARSINE)**	**200**
1332214	**ASBESTOS**	**200**
BARICOMP	BARIUM & BARIUM COMPOUNDS	
0071432	**BENZENE**	**200**
0092875	BENZIDINE	
0098077	BENZOTRICHLORIDE	
0262384	BENZO[a]PYRENE	
0100447	BENZYL CHLORIDE	
BERYCOMP	BERYLLIUM & BERYLLIUM COMPOUNDS	
0092524	BIPHENYL	
0117817	**BIS(2-ETHYLHEXYL) PHTHALATE**	**200**
542881	BIS(CHLOROMETHYL) ETHER	
0075252	BROMOFORM	
0106990	1,3-BUTADIENE	
0071363	N-BUTANOL	
0123864	N-BUTYL ACETATE	
CADMCOMP	**CADMIUM & CADMIUM COMPOUNDS**	**200**
0156627	CALCIUM CYANAMIDE	
0133062	CAPTAN	
0063252	CARBARYL	
CASNUM	**POLLUTANT**	**lbs**

0075150	CARBON DISULFIDE	
0056235	CARBON TETRACHLORIDE	
0463581	CARBONYL SULFIDE	
0120809	CATECHOL	
0133904	CHLORAMBEN	
0057749	CHLORDANE	
7782505	CHLORINE	
10049044	CHLORINE DIOXIDE	
0079118	CHLOROACETIC ACID	
0532274	2-CHLOROACETOPHENONE	
0108907	CHLOROBENZENE	
0510156	CHLOROBENZILATE	
0067663	**CHLOROFORM**	**200**
0107302	CHLOROMETHYL METHYL ETHER	
0126998	CHLOROPRENE	
CHROCOMP	**HEXAVALENT CHROMIUM & CHROMIUM COMPOUNDS**	**10**
COBACOMP	COBALT & COBALT COMPOUNDS	
COKOVEEM	COKE OVEN EMISSIONS	
COPPCOMP	COPPER & COPPER COMPOUNDS	
0095487	O-CRESOL	
0108394	M-CRESOL	
0106445	P-CRESOL	
1319773	CRESOLS/CRESYLIC ACID	
0098828	CUMENE	
CYANCOM	CYANIDE COMPOUNDS	
0094757	2,4-D, SALTS AND ESTERS	
3547044	DDE	
0334883	DIAZOMETHANE	
0132649	DIBENZOFURAN	
0096128	1,2-DIBROMO-3-CHLOROPROPANE	
0084742	DIBUTYLPHTHALATE	
0106467	1,4-DICHLOROBENZENE	
0095501	1,2-DICHLOROBENZENE	
0091941	3,3-DICHLOROBENZIDINE	
0111444	DICHLOROETHYL ETHER	
0542756	1,3-DICHLOROPROPENE	
0062737	DICHLOROVOS	
0111422	DIETHANOLAMINE	
0121697	N, N-DIETHYL ANILINE	
0064675	DIETHYL SULFATE	
0119904	3,3-DIMETHOXYBENZIDINE	
0060117	DIMETHYL AMINOAZOBENZENE	
0119937	3,3'-DIMETHYL BENZIDINE	
0079447	DIMETHYL CARBOMOYL CHLORIDE	
0068122	DIMETHYL FORMAMIDE	

CASNUM	POLLUTANT	lbs
0057147	1,1-DIMETHYL HYDRAZINE	
0131113	DIMETHYL PHTHALATE	
0077781	**DIMETHYL SULFATE**	**200**
0534521	4,6-DINITRO-O-CRESOL	
0051285	2,4-DINITROPHENOL	
0121142	2,4-DINITROTOLUENE	
0123911	**1,4-DIOXANE**	**200**
0122667	1,2-DIPHENYLHYDRAZINE	
0106898	**EPICHLOROHYDRIN**	**200**
0106887	1,2-EPOXYBUTANE	
0141435	ETHANOLAMINE	
0110805	2-ETHOXYETHANOL	
0141786	ETHYL ACETATE	
0140885	ETHYL ACRYLATE	
0100414	ETHYL BENZENE	
0051796	ETHYL CARBAMATE (URETHANE)	
0075003	ETHYL CHLORIDE (CHLOROETHANE)	
0106934	ETHYLENE DIBROMIDE (DIBROMOMETHANE)	
0107062	ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)	
0107211	ETHYLENE GLYCOL	
0151564	ETHYLENE IMINE (AZIRIDINE)	
0075218	ETHYLENE OXIDE	
0096457	ETHYLENE THIOUREA	
0075343	ETHYLIDINE DICHLORIDE	
FINMINFI	FINE MINERAL FIBERS	
0050000	**FORMALDEHYDE**	**200**
0064186	FORMIC ACID	
0076131	FREON 113 (TRICHLOROTRIFLUROETHANE)	
0098011	FURFURAL	
GLYCETHE	GLYCOL ETHERS	
0076448	HEPTACHLOR	
0118741	HEXACHLOROBENZENE	
0087683	HEXACHLOROBUTADIENE	
0077474	HEXACHLOROCYCLOPENTADIENE	
0067721	HEXACHLOROETHANE	
0822060	HEXAMETHYLENE-1,6-DIISOCYNATE	
0680319	HEXAMETHYLPHOSPHORAMIDE	
0110543	HEXANE	
0302012	HYDRAZINE	
7647010	HYDROCHLORIC ACID (acid aerosol only)	
7664393	HYDROGEN FLOURIDE (HYDROFLOURIC ACID)	
7783064	HYDROGEN SULFIDE	
0123319	HYDROQUINONE	
0078591	ISOPHORONE	

CASNUM	POLLUTANT	lbs
0067630	ISOPROPYL ALCOHOL (used in strong acid manufacturing. processes)	
LEADCOMP	**LEAD & LEAD COMPOUNDS**	**200**
0058899	LINDANE	
0108316	MALEIC ANHYDRIDE	
MANGCOMP	MANGANESE & MANGANESE COMPOUNDS	
MERCCOMP	MERCURY & MERCURY COMPOUNDS	
0067561	METHANOL	
0072435	METHOXYCHLOR	
0109864	2-METHOXYETHANOL	
0096333	METHYL ACRYLATE	
0074839	METHYL BROMIDE (BROMOMETHANE)	
0074873	METHYL CHLORIDE	
0071556	METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE)	
0078933	METHYL ETHYL KETONE (2-BUTANONE)	
0060344	METHYL HYDRAZINE	
0074884	METHYL IODIDE (IODOMETHANE)	
0108101	METHYL ISOBUTYL KETONE	
0624839	METHYL ISOCYANATE	
0074931	METHYL MERCAPTAN	
0080626	METHYL METHACRYLATE	
1634044	METHYL TERT BUTYL ETHER	
0101144	**4,4-METHYLENE BIS(2-CHLOROANILINE)**	**200**
0075092	**METHYLENE CHLORIDE (DICHLOROMETHANE)**	**200**
0101688	METHYLENE DIPHENYL DIISOCYANATE	
0101779	4,4'-METHYLENEDIANILINE	
0091203	NAPTHALENE	
NICKCOMP	**NICKEL & NICKEL COMPOUNDS**	**200**
7697372	NITRIC ACID	
0098953	NITROBENZENE	
0092933	4-NITROBIPHENYL	
0100027	4-NITROPHENOL	
0079469	2-NITROPROPANE	
0684935	N-NITROSO-N-METHYLUREA	
0062759	N-NITROSODIMETHYLAMINE	
0059892	N-NITROSOMORPHOLINE	
0144627	OXALIC ACID	
0056382	PARATHION	
0082688	PENTACHLORONITROBENZENE (QUINTOBENZENE)	
0087865	PENTACHLOROPHENOL	
0108952	PHENOL	
0106503	P-PHENYLENDIAMINE	
0075445	PHOSGENE	

CASNUM	POLLUTANT	lbs
7803512	PHOSPHINE	
7723140	PHOSPHORUS	
0085449	PHTHALIC ANHYDRIDE	
1336363	POLYCHLORINATED BIPHENYLS	
POLORGMA	POLYCYCLIC ORGANIC MATTER	
1120714	1,3-PROPANE SULTONE	
0057578	BETA-PROPIOLACETONE	
0123386	PROPIONALDEHYDE	
0114261	PROPOXUR (BAYGON)	
0078875	PROPYLENE DICHLORIDE (1,2-DICHLOROPROPANE)	
0075569	**PROPYLENE OXIDE**	**200**
0075558	1,2-PROPYLENIMINE (2-METHYL AZIRIDINE)	
0091225	QUINOLINE	
0106514	QUINONE	
RADIONUC	RADIONUCLIDES (INCLUDING RADON)	
SELECOMP	SELENIUM & SELENIUM COMPOUNDS	
0100425	STYRENE	
0096093	STYRENE OXIDE	
7664939	SULFURIC ACID (acid aerosol only)	
1746016	**2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN & CONGENERS**	**0.001**
0079345	1,1,2,2-TETRACHLOROETHANE	
0127184	**TETRACHLOROETHYLENE (PERCHLOROETHYLENE)**	**200**
0109999	TETRAHYDROFURAN	
13463677	TITANIUM DIOXIDE (TITANIUM OXIDE)	
7550450	TITANIUM TETRACHLORIDE	
0108883	TOLUENE	
0095807	2,4-TOLUENE DIAMINE	
0584849	2,4-TOLUENE DIISOCYANATE	
0095534	O-TOLUIDINE	
8001352	TOXAPHENE (CHLORINATED CAMPHENE)	
0120821	1,2,4-TRICHLOROBENZENE	
0079005	1,1,2-TRICHLOROETHANE	
0079016	**TRICHLOROETHYLENE**	**200**
0088062	2,4,6-TRICHLOROPHENOL	
0095954	2,4,5-TRICHLOROPHENOL	
1582098	TRIFLURALIN	
0540841	2,2,4-TRIMETHYLPENTANE	
8006642	TURPENTINE	
0108054	VINYL ACETATE	
0593602	VINYL BROMIDE	
0075014	VINYL CHLORIDE	
0075354	VINYLIDENE CHLORIDE (1,1-DICHLOROETHYLENE)	

CASNUM	POLLUTANT	lbs
0106423	P-XYLENES	
0095476	O-XYLENES	
0108383	M-XYLENES	
1330207	XYLENES (ISOMERS & MIXTURE)	
ZINCCOMP	ZINC & ZINC COMPOUNDS	

Appendix C: Potential to Emit Calculation

How to Calculate Your **Potential** VOC Emissions

"The Environmental Protection Agency (EPA), in its current regulations, defines a source's potential to emit of air pollutants as follows:

Potential to emit is the maximum capacity of a stationary source to emit under its physical and operational design. Any physical or operational limitation on the source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation, or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the EPA Administrator."[1]

① The first step is to **gather your Material Safety Data Sheets (MSDS)** for all coating, gluing, washoff and cleaning materials used at your facility. An actual MSDS for a solventborne *Compliant Sealer* is attached at the end of Appendix B and should be referenced throughout this section. You may want to refer to the "A Quick Guide to Reading a Material Data Safety Sheet" also at the end of Appendix B for a brief overview of what type of information is contained in each section of an MSDS.

② The next step is to **find the information you need** to determine the VOC content of each of the materials you use at your facility. Hopefully the MSDS will provide you with the "VOC lbs/gal."[2] If not, you will have to calculate it using two pieces of information: the coating density (the total weight of one gallon) of the coating and the % volatile (or %VOC) by weight.[3] See Section 2 or 3 of the MSDS to find this information. Some compounds are volatile but are not considered VOCs, therefore it is better to use %VOC by weight, if available. If the MSDS does not provide %VOC you should assume that all the % volatiles are VOCs. You determine the pounds of VOC per gallon by multiply the coating density by the % VOC (or volatile) by weight.

For the *Compliant Sealer*, the information needed is contained on page 2 in Section III. The coating density is 8 pounds per gallon and the % volatile by weight is 68%. For the

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[1] EPA's 4/14/98 "Potential to Emit Guidance for Specific Source Categories Memorandum"

[2] Sometimes the MSDS provides "VOC lbs/gal less water" or VOC lbs/gal less exempt compounds." Due to the way these values are calculated they are not appropriate for calculating actual emissions from the coatings. You should contact your supplier to obtain the actual "VOC lbs/gal." The other values are provided to show compliance with certain state or federal requirements that limit the total amount of VOC allowed in a specific coating and prevent bringing a coating into compliance simply by "watering" it down with water or another exempt solvent.

[3] Note: Sometimes the coating supplier lists specific gravity instead of coating density. You calculate the coating density in pounds per gallon by multiplying the specific gravity by 8.34 (the weight of a pound of water). If the specific gravity listed on the MSDS uses a reference other than water, you need to use the density of that reference compound. Unless specified otherwise, you should assume that the specific gravity reference is water.

Example: if Specific Gravity = 0.96
then the coating density = 0.96 x 8.34 pounds/gallon = 8 pounds/gallon

Compliant Sealer the pounds of volatiles per gallon is 0.68 x 8 = 5.44 pounds per gallon. However, the *Compliant Sealer* contains some volatile material (acetone) that is not considered a VOC. You would not normally know that, so the supplier has provided pounds of VOC per gallon right on the MSDS in Section III, under VOC (Exempt) = 4.6655 pounds per gallon.[4]

Repeat Step 2 for *each* of the materials you use.

③ The next step is to review the VOC content of each of the coatings you use (paints, toners, sealers, lacquers, and stains) to determine, for each general type of coating (i.e. stain, sealer and lacquer), the coating that contains **the highest amount of non-exempt VOC**. For each general type of coating, you will now assume that this is the only coating used - that you always use this worst-case coating (i.e. you only use the "worst-case" stain, the "worst-case" sealer, etc.).

Then review the MSDS from all other VOC-containing products you use to support your wood coating process to determine, for each general type of material (i.e thinning solvents, glues, washoff strippers, and cleaning products) the materials with the highest amount of non-exempt VOC. For each general type of support material, you will now assume that this is the only type used - that you always use this worst-case material.

④ The next step is to **determine the total number of gallons** of each different "worst-case" VOC-containing material that could be used in your wood coating process in a year **if you operated 24 hours per day, 365 days a year at your maximum production capacity**. You are allowed to take into account the maximum design rate of each spray gun and any inherent physical limitations on the operation, such as: drying time; conveyor capacity; manufacturing time; etc. (see EPA's 1/25/95 guidance memorandum titled, *"Options for Limiting the Potential to Emit of a Stationary Source Under Section 112 and Title V of the Clean Air Act."* - Call DEP Permit Assistance at (207) 287-2437 to obtain information about how to limit your potential to emit).

For example, let's say that the your facility operates 8 hours per day and uses approximately 8 gallons each workday of all your different sealer materials combined. Let's also assume that the *Compliant Sealer* is your "worst-case" sealer material and that you are already producing your product at the fastest rate possible (limited by your physical space and the equipment you own, not the number of employees). Therefore, if you operated 24 hours each day you would use 24 gallons of *Compliant Sealer* each day. Then there are 365 days per year, so that is 8,760 gallons of *Compliant Sealer* each year.

Repeat this step for *each* of the "worst-case" materials you use. You might find it helpful to record your results in a table similar to that included in this Appendix.

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[4] For the *Compliant Sealer*, the %VOC is equal to the 68% volatile (from Section III) minus the 9.68% acetone (found in Section II-A). 68.0 - 9.68 = 58.32% VOC. The VOC per gallon is 58.32% of the 8 pounds per gallon total weight (from Section III). 8 x 0.5832 = 4.6655 pounds VOC per gallon.

⑤ The next step is to determine the **total tons of potential VOC emissions in a year from each "worst-case" material.**

Formula: $VOC = (Gallons \times VOC_{Density}) \div 2{,}000$ pounds/ton

Where: VOC = The potential VOC emissions from the material (in tons) for the year.
Gallons = The total yearly usage of the material in gallons (from Step 4)
$VOC_{Density}$ = The VOC density of the material in pounds of VOC per gallon (from Step 2)

***Compliant Sealer* Example:**

VOC = [8,760 gallons x 4.6655 pounds/gallon] ÷ 2,000
VOC = 40,870 pounds of VOC emissions per year ÷ 2,000 = 20.4 tons per year

You need to repeat this calculation for *each* "worst-case" material from Step 3.

⑥ The final step is to determine the **total potential VOC emissions from your facility each year**. To do this you need to add up all the individual material calculations you did under Step 5.

NOTE: If your potential VOC emissions are 25 tons per year or more, you must obtain a permit from the DEP Bureau of Air Quality. A facility may choose to limits its potential VOC emissions, and therefore avoid some of the more complicated requirements by requesting to obtain a state permit to operate with enforceable permit restrictions such as: hours of operation, production limitations or pollution control equipment. Contact DEP Permit Assistance at (207) 287-2437 for more information.

It is not difficult for a small- to medium-sized facility to have potential VOC emissions above 25 tons per year. At an actual use of just 8 gallons per 8 hour day, the *Compliant Sealer* alone contributes 20.4 tons of potential VOC emissions per year - almost reaching the threshold by itself! And this example coating is a "compliant" sealer - many sealers have a higher VOC content. In addition, most facilities apply more than one coating - therefore, even if you use less than 8 gallons per day of sealer, you could still exceed the 25 tons per year threshold when the potential VOC emissions from all your materials are added together.

How to Calculate Your **Potential** HAP Emissions

HAP regulations only apply to manufacturers engaged in the manufacture of **wood furniture and wood furniture components**. The wood furniture HAP regulation covers the manufacture of any product made of wood, a wood product such as rattan or wicker, or an engineered wood product such as particleboard, that can fit under the following SIC codes: 2434, 2511, 2512, 2517, 2519, 2521, 2531, 2541, 2599, 2712. *Even if your business is not officially classified by one of these SIC codes, you could be subject to the regulation if you manufacture any of the types of products listed under these SIC codes.*

The first steps to determining your potential to emit HAPs are:

① Gather your Material Safety Data Sheets (MSDS) and/or Certified Product Data Sheets (CPDS) for all coating, gluing, washoff and cleaning materials used at your facility.

② Review each MSDS to determine whether any hazardous air pollutants (HAPs) are in any of the materials you use (the list of HAPs is contained in Appendix A of this Guide).

Before attempting to calculate your potential to emit hazardous air pollutants (HAPs), see if you can meet one of the three exemptions to the HAP regulation:

1. A facility uses no more than 250 gallons per month, every month, of coating, gluing, cleaning and washoff materials, regardless of whether they contain HAPs, in all of its operations (including those other than wood furniture).

2. A facility uses no more than 3,000 gallons for each and every 12-month rolling period (e.g. January 1 to December 31, and February 1 to January 31, and March 1 to February 28, etc.) of coating, gluing, cleaning and washoff materials, regardless of whether they contain HAPs, in all of its operations (including those other than wood furniture).

3. A facility's *actual* use of all materials from all of its operations (including those other than wood furniture) contains no more than a total of 5 tons per year of any one HAP, or 12.5 tons per year of any combination of HAPs, during each and every 12-month rolling period. Contact the Bureau of Air Quality at (207) 287-2437 for help calculating *actual* HAP use.

If your facility qualifies for one or more of the exemptions listed above, you must maintain the appropriate records (e.g. purchase invoices and MSDSs and/or CPDSs) to demonstrate compliance with the exemption.

If you cannot qualify for one of the exemptions, you must calculate your potential to emit HAPs. Call the Bureau of Air Quality at (207) 287-2437 for help calculating your HAP potential to emit

Note: If your potential to emit HAPs is 10 tons per year (or more) of any individual HAP or 25 tons per year (or more) of a combination of HAPs, you must obtain a permit from the DEP Bureau of Air Quality. A facility may choose to limits its potential HAP emissions to avoid some of the more complicated requirements by requesting to obtain a state permit to operate with enforceable permit restrictions such as: hours of operation, production limitations or use of pollution control equipment. Contact DEP Permit Assistance at (207) 287-2437 to obtain more information.

Example of a Table to Record VOC Emission Calculation Information

Coating name	**Maximum Number of Gallons (Step 4)**	**VOC content (lbs./gal) (Step 3)**	**Potential VOC emisisons (tons/year) (Step 5)**
Worst-case sealer: Example: *Compliant Sealer*	8,760	4.6655	20.4
Worst-case lacquer:			
Worst-case stain:			
Worst-case washcoat:			
Worst-case filler:			
Worst-case wiping stain:			
Worst-case highlight:			
Worst-case primer:			
Worst-case paint:			
Worst-case washoff solvent:			
Worst-case cleaning solvent:			
Worst-case thinner:			
Total Emissions (tons)			

Appendix D

Manifesting Hazardous Waste

What is a manifest?

The Hazardous Waste Manifest form is a specific shipping document that must accompany all hazardous waste shipments. It is the generator's responsibility to ensure that the form is filled out completely and correctly. The form must be filled out before the waste leaves the site of generation and it must accompany the hazardous waste during shipment. Every person who handles the waste identifies themselves and dates and signs the manifest form. The manifest system tracks the hazardous waste "from cradle to grave". A copy of a Maine manifest is in Appendix C.

Where do I get a manifest form and how do I fill it out?

It is best to use a manifest form from the state that the hazardous waste will be shipped to. All New England states accept the use of one another's manifest forms. Maine manifest forms may be obtained by calling the State of Maine at (207) 287-2651. Your transporter may also have forms and help with the preparation of the forms. The instructions are on the back of each form. The form is an eight (8) copy form so please press firmly or type, so all copies are readable.

In addition to the identification and signatures of the generator, the transporter(s) and the facility, there is space to identify the waste being shipped. The waste is identified in specific terms and with a hazardous waste code. You must describe how many containers of waste, and how much of it is being shipped and where it is going. There are extra reporting requirements if you export your hazardous waste.

What happens to the eight (8) copies of the manifest?

Fill out the manifest form as completely as possible. When the transporter arrives to pick up the waste, have him/her sign the form and remove the back three copies, copies #6, #7, and #8. Copy #8 is for your own records. You must mail out copy #6 and #7 within 7 days. Mail copy #6 to the Destination State (the state that you are sending the waste to) and copy #7 to the State of Maine (the Generator State). This will prove that you sent your waste off-site with a licensed hazardous waste transporter. If you are shipping

your hazardous waste to a licensed facility within Maine, the State of Maine will be both the generator and destination state.

When the transporter delivers the waste to the licensed, authorized, facility, they also must sign and date the form. The transporter keeps copy #5 for proof that he/she delivered it all to the facility. The facility keeps copy #4 for their own records. The facility then mails out copies #1, #2, and #3, respectively, to the Destination State, the Generator State (Maine) and to you, the generator. When copies #1, #2, and #3 are received, all parties know that the waste has made it to its final destination at the facility.

Some states do not produce an eight (8) part manifest form. If you are using another state's form and it is only a four (4) part or six (6) part form, you are required to make extra copies of the form to make sure that eight (8) copies in all are distributed as described above.

If you don't receive copy #3 within 35 days of shipping the waste off-site, you must notify the DEP by calling (207) 287-2651. You cannot be certain that your waste has reached the facility until you receive copy #3 of the manifest, fully signed. If you have still not received a signed copy #3 within 45 days of transport, you must send a written exception report to the DEP.

Rejection Reports

If for any reason the facility you send your hazardous waste to rejects any or part of the load, you must prepare a Rejection Report. A Rejection Report is due to the DEP within twenty (20) days of the rejection. The report must include the following information:

- ⇨ the preprinted number(s) from the original hazardous waste manifest form(s) of the waste that was rejected
- ⇨ explain if the rejected waste was returned to you or describe the alternate facility if the waste was forwarded
- ⇨ any change in the information supplied on the original hazardous waste manifest form

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Hazardous Waste MANIFEST SECTION, State House, Station 17, Augusta, ME 04333

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law but may be required by State Law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number: ME A 175993

B. S.G.I. (Gen. Site Address)

5. Transporter 1 Company Name | 6. US EPA ID Number

C. S.T.I. (Lic. Plate #)

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. S.T.I. (Lic. Plate #)

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.					EPA / State
b.					EPA / State
c.					EPA / State
d.					EPA / State

J. Additional Descriptions for Materials Listed Above

a. b. c. d.

K. Handling Codes for Wastes Listed Above — Interim / Final

a. b. c. d.

15. Special Handling Instructions and Additional Information

Point of Departure:

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR — Printed/Typed Name | Signature | Month Day Year

TRANSPORTER — 17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name | Signature | Date (Month Day Year)

TRANSPORTER — 18. Transporter 2 Acknowledgement or Receipt of Materials — Printed/Typed Name | Signature | Date (Month Day Year)

FACILITY — 19. Discrepancy Indication Space

FACILITY — 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. — Printed/Typed Name | Signature | Date (Month Day Year)

EPA Form 8700-22 (Rev. 1-91) Previous editions are obsolete.

FACILITY MAILS TO DESTINATION STATE

In the event of a spill, contact the National Response Center, U. S. Coast Guard 1-800-424-8802.
For spill within Maine, contact DEP, Oil and Hazardous Materials Control at 1-800-482-0777.

ME A 175993

STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION HAZARDOUS WASTE MANIFEST SECTION

INSTRUCTIONS

FOR COMPLETING THE MAINE UNIFORM HAZARDOUS WASTE MANIFEST

IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING THIS FORM ALL 8 COPIES MUST BE TOTALLY LEGIBLE

GENERAL INFORMATION

The Hazardouse Waste Manifest is designed to track waste from the point of generation to final disposal ("cradle to grave"). In order to accomplish this goal, it is essential that all items in the manifest be completed correctly. Incomplete, incorrect, or illegible manifests are violations of the law and could subject you to civil or criminal liabilities as specified in Maine Hazardous Waste Management Rules and the Maine Hazardous Wate, Septage and Solid Waste Management Act.

The Maine manifest contains 8 copies. **ALL COPIES MUST BE LEGIBLE!** (illegible manifests submitted to the State will be returned to Generator for proper completion.) This form is designed for use on a 12 pitch (elite) typewriter. A firm ball point pen may also be used only if you press down HARD. The eight copies must be filed with the appropriate parties as they are completed.

COPY DISTRIBUTION

COPY 1: **DESTINATION STATE COMPLETED COPY: Mailed by HWF:** This original stays with the shipment from generation to completion by the HWF: When the manifest is completed the HWF must mail this copy to the State where his facility is located.

COPY 2: **GENERATOR STATE COMPLETED COPY: Mailed by HWF:** When the HWF has completed his section of the manifest, he mails this copy to the State where the waste was generated.

COPY 3: **GENERATOR COMPLETED COPY: Mailed by HWF:** When the HWF has completed his section of the manifest, he mails this copy back to the Generator of the waste, who must retain it on site for his records.

COPY 4: **HWF COPY: Retained by HWF:** When the HWF has completed his portion of the manifest, he keeps this copy for his records.

COPY 5: **TRANSPORTER: Retained by the Transporter:** When the transporter has completed his section of the manifest, and transfers the waste to the HWF, he keeps this copy for his records.

NOTE: If a **CONTINUING TRANSPORTER** is used, the Generator is responsible for supplying him with a legible photocopy of the manifest, which must contain signatures where required.

COPY 6: **DESTINATION STATE: Mailed by Generator:** When the Generator has completed his section of the manifest and transfers his waste to the transporter, he mails this copy to the State where the designated facility (HWF) is located.

COPY 7: **GENERATOR STATE: Mailed by the Generator:** When the Generator has completed his section of the manifest and transfers his waste to the transporter, he mails this copy to the State where the waste was generated.

COPY 8: **GENERATOR: Retained by Generator:** When the Generator has completed his section of the manifest and transfers his waste to the transporter, he keeps this copy for his records.

GENERATOR SECTION

Item 1: GENERATOR US EPA ID NO-MANIFEST DOCUMENT NO. — Enter the US EPA 12 digit identification number. Small Quantity generators should enter the number MEX020000000 here. Then enter a UNIQUE 5 digit number you assign to this manifest. Use of serially increasing numbers (eg. 00001, 00002 etc.) is recommended.

Item 2: Page 1 OF ___ — Enter the total number of pages used to complete this manifest, i.e., the first form plus the number of Continuation Sheets, if any.

Item A: STATE MANIFEST DOCUMENT NUMBER — Number preprinted by Maine except on the Continuation Sheets. Enter this number on each of the Continuation Sheets attached to or a part of a manifest under Item L.

Item 3: GENERATOR'S NAME AND MAILING ADDRESS — Enter the name (as notified to EPA) & mailing address of the Generator.

Item 4: GENERATOR'S PHONE NUMBER — Enter a telephone number with the area code where an authorized agent of the Generator can be reached in an emergency.

Item B: STATE GENERATOR'S ID (S.G.I.) — The State Generator ID is the STREET ADDRESS of the Generator's pick-up location. If the mailing address and the street address are the same, enter "same" in this block.

Item 5: TRANSPORTER 1 COMPANY NAME — Enter the company name (as notified by EPA) of the first transporter who will transport the waste.

Item 6: US EPA ID NUMBER—Enter the U.S. EPA ID 12 digit identification number of the first transporter identified in Item 5.

Item C: STATE TRANSPORTER'S ID (S.T.I.) — Enter the State of registration & the license plate number of the waste-carrying portion of the vehicle being used to transport the waste.

NOTE: ALL HAZARDOUS WASTE TRANSPORTERS OPERATING IN MAINE MUST HAVE A VALID MAINE HAZARDOUS WASTE TRANSPORTER'S LICENSE.

Item D: TRANSPORTER'S PHONE — Enter a telephone number with area code where an authorized agent of the transporter can be contacted.

Item 7: TRANSPORTER 2 COMPANY NAME — If applicable, enter the company name (as notified to EPA) of the 2nd transporter who will transport the waste. If more than 2 transporters will be used, use a Maine Manifest Continuation Sheet & list the transporters in the order they will be transporting the waste.

Item 8: US EPA ID NUMBER — If applicable, the U.S. EPA 12 digit identification number of the 2nd transporter identified in item 7.

Item E: STATE TRAN ID.(S.T.I.) — If applicable, enter the 2nd transporter's State of registration & license plate number for the waste-carrying portion of the vehicle being used to make the pick-up.

Item F: TRANSPORTER'S PHONE — If applicable, enter the 2nd transporter's telephone number with area code where an authorized agent of the transporter can be contacted.

Item 9: DESIGNATED FACILITY NAME & SITE ADDRESS — Enter the company name (as notified to EPA) of the HWF designated to receive the waste listed on this manifest. The address must be the site address, which may differ from the mailing address.

Item 10: US EPA ID NUMBER — Enter the U.S. EPA 12 digit identification number of the designated HWF identified in Item 9.

Item G: STATE FACILITY'S ID — Enter mailing address if different from site address.

Item H: FACILITY PHONE — Enter a telephone number with area code for the HWF designated to receive the waste listed on the manifest.

Item 11: US DOT DESCRIPTION — ALL of the following informationmust be entered: The correct US DOT (Dept. of Transportation) name for the waste as identified in 49 CFR Parts 171-177 (usually found in Column 2 of Section 172.101), the assigned DOT Hazard Class (usually in Column 3) & the 4 digit UN/NA ID Number (Column 3A). (Example: Waste Acetone, **flammable liquid**, UN 1090). US DOT requires the word "waste" before or in the shipping name for all hazardous waste.

Item 12: CONTAINERS (NO & TYPE) — Enter the number of containers for each waste and the appropriate abbreviations from TABLE 1 (below) for the type of container used:

TABLE I — CONTAINER TYPE

DM = Metal Drums, barrels, kegs	TP = Tanks, portable	CM = Metal boxes, cartons, cases (incl. roll-offs)
DW = Wooden drums, barrels, kegs	TT = Cargo Tanks (tank trucks)	CW = Wooden boxes, cartons, cases
DF = Fiberboard or plastic drums, barrels, kegs	TC = Tank Cars	CF = Fiber or plastic boxes, cartons, cases
CY = Cylinders	DT = Dump Trucks	BA = Burlap cloth, paper/plastic bags

Item 13: TOTAL QUANTITY — Enter the total quantity of waste described on each line, relative to the units used in ITEM 14.

Item 14: UNIT (Wt./Vol.) — Enter the appropriate abbreviation from Table II (below) for the unit of measure used in determining the total quantity of waste described on each line. DO NOT use fractions.

TABLE II — UNITS OF MEASURE

G = Gallons (liquids only)	L = Liter (liquids only)	Y = Cubic Yards
P = Pounds	K = Kilograms	N = Cubic Meters
T = Tons	M = Metric Tons (1,000 kg)	

Item I: WASTE NO. — Enter the 4 digit EPA hazardous waste number as it appears in 40 CFR Part 261, Subparts C & D. (Note: If a non-RCRA STATE REGULATED waste is being manifested, enter the state waste code here. If both the Destination and Generator States have assigned codes, use the Destination State code. If there is no EPA/State code, enter: "NONE" -Do NOT leave blank.)

Item J: ADDITIONAL DESCRIPTIONS FOR MATERIALS LISTED ABOVE — Enter description (chemical names, constituent percentages, etc.) for any waste which has a US DOT shipping name ending in N.O.S. If you entered a STATE-DESIGNATED WASTE CODE in Item I, provide description or note any EPA Hazard Codes: Ignitable (I), Corrosive (C), Reactive (R), EP Toxic (E), Acute Hazardous (H), Toxic (T). Enter specific gravity if other than 1.0 and physical state of waste. Any additional desired waste description may be entered here.

Item 15: SPECIAL HANDLING INSTRUCTIONS & ADDITIONAL INFORMATION — Use this space to indicate special transportation, treatment, storage or disposal or Bill of Lading information. If an alternate facility is designated, note it here. For INTERNATIONAL SHIPMENTS, the Generator must enter here the point of departure from the U.S. through which the waste must travel before entering a foreign country (City & State). This space may also be used for emergency response numbers, and other information the Generator wishes to include about the shipment.

Item K: HANDLING CODES — HWF completes this section—see "Designated Facility Section"-(below)

Item 16: GENERATORS CERTIFICATION — The Generator must read, sign (by hand) & date the certification (with date of transfer to transporter). If a mode other than highway is used, the word "highway" should be lined out & the appropriate mode (rail, water or air) inserted in the space below. If another mode in addition to the highway mode is used, enter the appropriate mode (e.g. "and rail") in the space below.

TRANSPORTER SECTION

Item 17: TRANSPORTER 1 ACKNOWLEDGEMENT — Print or type the name of the person accepting the waste on behalf of the 1st transporter. That person must acknowledge acceptance of the waste described on the manifest by signing & entering the date of receipt.

Item 18: TRANSPORTER 2 ACKNOWLEDGEMENT — If applicable, follow instructions for Item 17 for Transporter 2.

DESIGNATED FACILITY (HWF) SECTION

Item K: HANDLING CODES (HWF COMPLETES) — Enter the final Handling Code as described in 40 CFR 264 Appendix I, Table 2 for each waste listed in Item 11. For example, D81-Landfill or T07-Rotary Kiln Incinerator.

Item 19: DISCREPANCY INDICATION SPACE — The authorized representative of the designated facility's owner or operator must note in this space any significant discrepancy between the waste described on the manifest & the waste actually received at the facility. Any rejected materials should be listed here, along with an indication of the disposition of the rejected materials. **Any applicable Discrepancy or Exception reporting requirements must also be complied with. Federal and State regulations vary.**

Item 20: FACILITY OWNER OR OPERATOR CERTIFICATION: Print or type the name of the person accepting the waste on behalf of the owner or operator of the designated HWF. That person must acknowledge acceptance of the waste described on the manifest by signing (by hand) & entering the date of receipt. The signature of the authorized HWF agent indicates acceptance (except for items specified in Item 19) & agreement with the statements on this manifest.

NOTE: FOR INTERSTATE SHIPMENTS (between different states) YOU MAY BE REQUIRED TO COMPLY WITH THE MANIFESTING REQUIREMENTS OF BOTH THE DESTINATION & GENERATOR STATES REGARDING THE COMPLETION OF SPECIFIC INFOBMATION INCLUDED IN LETTERED ITEMS A-L. You may wish to contact State agencies for more information on this subject.

REMINDER: ALL 8 COPIES OF THIS FORM MUST BE LEGIBLE

Appendix E

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires XX/XX/02
GSA No. 0246-EPA-OT

Please refer to Section V. Line-by-Line Instructions for Completing EPA Form 8700-12 before completing this form. The information requested here is required by law (Section 3010 of the *Resource Conservation and Recovery Act*).

Notification of Regulated Waste Activity

EPA United States Environmental Protection Agency

Date Received (For Official Use Only)

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

☐ A. Initial Notification ☐ B. Subsequent Notification *(Complete item C)*

C. Installation's EPA ID Number

II. Name of Installation *(Include company and specific site name)*

III. Location of Installation *(Physical address not P.O. Box or Route Number)*

Street

Street *(Continued)*

City or Town | State | Zip Code

County Code | County Name

IV. Installation Mailing Address *(See Instructions)*

Street or P.O. Box

City or Town | State | Zip Code

V. Installation Contact *(Person to be contacted regarding waste activities at site)*

Name *(Last)* | *(First)*

Job Title | Phone Number *(Area Code and Number)*

VI. Installation Contact Address *(See Instructions)*

A. Contact Address Location ☐ Mailing ☐ | B. Street or P.O. Box

City or Town | State | Zip Code

VII. Ownership *(See Instructions)*

A. Name of Installation's Legal Owner

Street, P.O. Box, or Route Number

City or Town | State | Zip Code

Phone Number *(Area Code and Number)* | B. Land Type | C. Owner Type | D. Change of Owner Indicator (Yes ☐ No ☐) | Date Changed (Month Day Year)

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0028 Expires XX/XX/02
GSA No. 0246-EPA-OT

ID - For Official Use Only

VIII. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes. Refer to Instructions)*

A. Hazardous Waste Activities

1. Generator (See Instructions)
   - ☐ a. Greater than 1000kg/mo (2,200 lbs.)
   - ☐ b. 100 to 1000 kg/mo (220-2,200 lbs.)
   - ☐ c. Less than 100 kg/mo (220 lbs)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - ☐ a. For own waste only
   - ☐ b. For commercial purposes

Mode of Transportation
- ☐ 1. Air
- ☐ 2. Rail
- ☐ 3. Highway
- ☐ 4. Water
- ☐ *5. Other - specify* _____

☐ 3. Treater, Storer, Disposer (at installation) Note: A permit is required for this activity, see instructions.

4. Hazardous Waste Fuel
   - ☐ a. Generator Marketing to Burner
   - ☐ b. Other Marketers
   - ☐ c. Boiler and/or Industrial Furnace
     - ☐ 1. Smelter Deferral
     - ☐ 2. Small Quantity Exemption

   Indicate Type of Combustion Device(s)
   - ☐ 1. Utility Boiler
   - ☐ 2. Industrial Boiler
   - ☐ 3. Industrial Furnace

☐ 5. Underground Injection Control

B. Universal Waste Activity

☐ 1. Large Quantity Handler of Universal Waste

C. Used Oil Recycling Activities

1. Used Oil Recycling Marketer
   - ☐ a. Marketer Directs Shipment of Used Oil to Off-Specification Burner
   - ☐ b. Marketer Who First Claims the Used Oil Meets the Specifications
2. Used Oil Burner - Indicate Type(s) of Combustion Device
   - ☐ a. Utility Boiler
   - ☐ b. Industrial Boiler
   - ☐ c. Industrial Furnace
3. Used Oil Transporter - Indicate Type(s) of Combustion Device(s)
   - a. Transporter
   - b. Transfer Facility
4. Used Oil Processor/Re-refiner - Indicate Type(s) of Activity(ies)
   - ☐ a. Process
   - ☐ b. Re-refine

IX. Description of Regulated Wastes *(Use additional sheets if necessary)*

A. Characteristics of Nonlisted Hazardous Wastes. *(Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles; See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable *(D001)*	2. Corrosive *(D002)*	3. Reactive *(D003)*	4. Toxicity Characteristic	(List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
☐	☐	☐	☐	

B. Listed Hazardous Wastes. *(See 40 CFR 261.31 - 33; See instructions if you need to list more than 12 waste codes.)*

1	2	3	4	5	6
7	8	9	10	11	12

C. Other Wastes. *(State or other wastes requiring a handler to have an I.D. number; See instructions.)*

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Name and Official Title *(Type or print)*	Date Signed

XI. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. *(See Section III of the booklet for addresses.)*

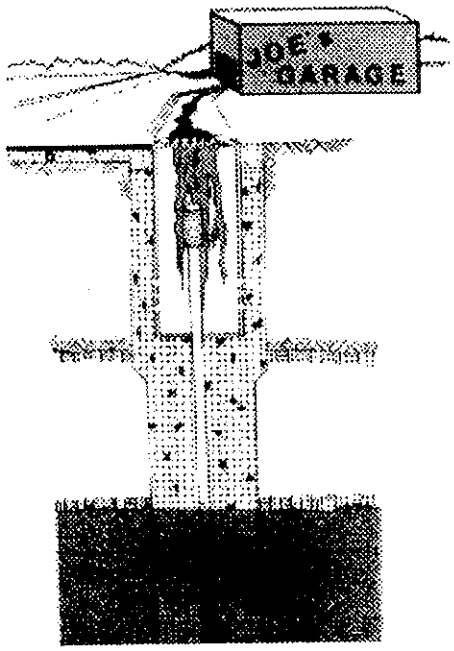
Appendix F

DEP ISSUE PROFILE
Floor Drain Management

date: July 1998 contact: (207) 287-3901

Background
Floor drains are collection points which remove wash water and other liquid wastes from a work area and carry them away through pipes or ditches for disposal. Every year Mainers improperly dispose of thousands of gallons of pollutants through floor drains -- a practice which contaminates soil and ground water, threatening drinking water supplies. If your business has floor drains, here are four steps to help you evaluate their risk and identify options to fix this environmental hazard.

STEP 1: Find out where your floor drains go.



Have you checked your floor drains lately? Do you know where they go? If you are unsure where your floor drains go, check the building's blueprint or speak with your local code enforcement officer about conducting a dye test. Identifying where your floor drains are connected is a vital first step.

Floor drains connected to a municipal sewer system are the DEP-preferred connection option. If your floor drains are connected to a municipal sewer system, make sure your local sewer district knows what types of liquid wastes could enter your floor drains. Your local sewer district may require you make an effort to keep some types of pollutants from entering the drains, possibly by developing a spill prevention and containment plan or installing an oil/water separator.

But, not everyone has access to a municipal sewer system. Without access to a municipal sewer, acceptable connection options are limited by the types and amounts of liquid wastes potentially flowing to your floor drains.

STEP 2: Know what goes down your floor drains.

Is that just soapy wash water from your vehicles or does it contain gasoline, oils and cleaning solvents? Are process chemicals lost when equipment is cleaned or solutions changed? Thinking about what goes down your floor drains may give you a little headache now, but it's better than the BIG financial and public relations headache that could await you if liquid wastes from your floor drains pollute local drinking water. Consider not only what you *know* goes down floor drains but also what *might* drip, leak, spill or wash into them.

Generally, liquid waste can be divided into two broad categories based on its potential risk to contaminate ground water:

- **LOW RISK** - This is waste water that a normal household would produce, including animal and vegetable matter, soap and diluted domestic-use cleaning solutions. Waste water from commercial and industrial sources is also considered LOW RISK as long as both the ingredients and their concentrations are similar to household waste water. Businesses which typically produce this kind of waste water include restaurants, schools, hotels and some veterinary clinics.

Type of Business	Potential Pollutants to Floor Drains[1]
▪ Engine and equipment repair facilities (vehicles, aircraft, watercraft, etc.)	▪ Various fuels, oils, degreasers, hydraulic fluids, cleaning solvents, antifreeze, metal waste
▪ Printers and silk screening operations	▪ Inks, dyes, cleaning solvents
▪ Photoprocessors	▪ Film developing solutions
▪ Commercial car and truck washes	▪ Oil- and grease-contaminated wash water
▪ Drycleaners	▪ Dry cleaning solutions
▪ Meat packing and food processing facilities	▪ Animal by-products, pathogens, high nitrogen waste water
▪ Metal fabricators, metal platers and electronic parts manufacturers	▪ Oils, solvents, caustics, paints, metal waste
▪ Pest control companies, lawn care companies and other commercial application services	▪ Pesticides, fertilizers and pesticide-contaminated wash water

- **HIGH RISK** - This waste water has ingredients, in types or concentrations, which you would not normally find in household waste water. This category includes waste water which contains any pollutants such as those listed in the table to the left.

Even if the liquid waste entering your floor drains is LOW RISK, but the potential exists for any pollutants to drip, leak, spill or wash into the floor drains, you must consider your liquid waste as HIGH RISK.

STEP 3: Make the right floor drain connection.

If you have **LOW RISK** liquid waste entering your floor drains, here are your options where no municipal sewer is available.

Option 1: Connect your floor drains to an approved subsurface disposal system. Floor drains may be connected to a subsurface waste water disposal (septic) system designed and installed in accordance with the state plumbing code[2] if the following criteria are met:

- the disposal area is properly sized to handle the potential flow from the drains;
- there is no significant potential for pollutants to drip, spill or wash into the floor drains; and

[1]Many of these potential pollutants are also required to be managed as hazardous waste. Information about what is a hazardous waste, proper storage and disposal is available from DEP's Bureau of Remediation and Waste Management at (207)287-2651.

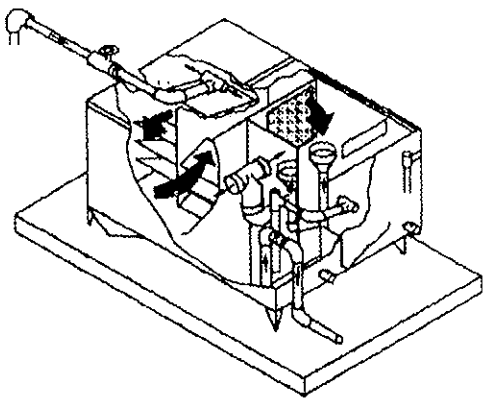
[2] 144A CMR 241, *Maine Subsurface Waste Water Disposal Rules* (June 1, 1998).

- the floor drain is necessary for the disposal of wash water or other liquid waste similar to household waste water.

Option 2: Connect your floor drains to a pipe which discharges on top of the ground. Floor drains may be piped to the top of the ground if these criteria are met:

- the pipe must discharge on top of the ground in an area that is accessible for inspection;
- the pipe must not discharge directly into a ditch, stream, wetland, pond or other surface water body;
- there is no significant potential for pollutants to drip, leak, spill or wash into the floor drains; and
- the volume of liquid waste does not exceed 60 gallons per day, and proper erosion control methods are used for discharge volumes over 30 gallons per day.

DEP recommends the installation of an oil/water separator if snow melt or waste water is generated from cars, trucks or other equipment utilizing engines which run on gasoline, diesel or aviation fuel. However, oil/water separators work best when they receive **only** oils and water. Water-soluble solvents and some gasoline additives will pass through an oil/water separator and be discharged with the water. Some detergents will also emulsify the oil and allow it to pass through the separator as well. Finally, oil/water separators must be inspected and cleaned routinely, and the waste generated from cleaning the separator must be disposed of in an approved manner (see *HIGH RISK, Option 2* discussion).



If you have **HIGH RISK** liquid waste entering your floor drains or if the potential exists that it could, you have the following options in areas where no municipal sewer is available.

Option 1: Seal the floor drains. Ask yourself: Are the floor drains really needed? **Floor drains should be avoided or eliminated where possible.** A bag of cement, a little water, a trowel -- and you're on your way.

Option 2: Connect to a holding tank. DEP recommends an above ground tank with both a sound and a visual alarm for when the tank gets full. Your holding tank waste must be analyzed prior to disposal and the contents of the holding tank disposed of as determined by the laboratory analysis. Proper disposal may mean having the tank contents trucked away as hazardous or special waste by a licensed transporter or, after getting approval from the sanitary district, shipped to a licensed waste water treatment plant. Depending on the pollutants collected in the holding tank, the tank may also need to be registered with the DEP. Contact the DEP's Bureau of Remediation and Waste Management at (207)287-2651 for information about tank registration.

Option 3: Separate the facility into two areas by building a berm. All activities which could create HIGH RISK liquid waste would be performed in an area where floor drains are sealed or connected to a holding tank (see *Option 2*). The other area -- the LOW RISK waste water area -- could be served by floor drains providing certain criteria are strictly met (see *LOW RISK options*, page 2). This is appropriate for many fleet maintenance buildings; the HIGH RISK waste water area is used for changing fluids and repair work and the LOW RISK waste water area is used for vehicle washing or catching melt-water prior to servicing. Appropriate activities in each area need to be strictly observed and you should have a spill prevention, control and clean-up plan in case HIGH RISK pollutants accidentally make their way into the LOW RISK area.

Businesses that generate a significant volume of **HIGH RISK** waste water and for whom the above options are not practical must obtain a waste discharge license from the DEP for the installation, operation and maintenance of a subsurface waste water disposal (septic) system. Examples of such businesses include commercial car washes, meat packing facilities, food processors and commercial agricultural operations. Contact the DEP at (207)287-3901 for more information about waste discharge licenses.

STEP 4: Notify the DEP.

Whether you've sealed your floor drains with cement, connected them to a holding tank or chosen one of the other options mentioned here, you must notify the DEP in writing about your action. The DEP uses information about floor drains to assess potential threats to ground water quality. The steps you take to eliminate or modify risky floor drain practices should be noted by us!

If you have questions or would like more information, please contact:

Underground Injection Control Program
Maine Dept. of Environmental Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, ME 04333-0017

Tel.: 207-287-3901
FAX: 207-287-7191
E-mail: uic@state.me.us

Visit us at *http://www.state.me.us/dep/blwq/docstand/uic/uichome.htm*

Other UIC Publications

- UIC Floor Drain Management Fact Sheet #1: Holding Tanks
- UIC Floor Drain Management Fact Sheet #2: Using Berms to Separate Your Facility
- DEP Issue Profile: Underground Injection Control Program