

COMPLIANCE CERTIFICATION WORKBOOK

MANAGING YOUR ENVIRONMENTAL HEALTH & SAFETY PROGRAMS



COLORADO SMALL BUSINESSES

For Use with the Small Business Compliance Certification Checklist

By
the Colorado Department of Public Health and Environment
and Printing & Imaging Association Mountain States

ACKNOWLEDGEMENT

Printing Services for this project were provided by Johnson Printing in Boulder, Colorado
www.jpcolorado.com

and

The Colorado Department of Public Health and Environment Building Operations and Facility Management
Print Shop

We appreciate their support.

We would also like to acknowledge the Printing & Imaging Association Mountain States (PIAMS) for their
continued support of this project.

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1.0 Introduction



We are pleased to present the Colorado Small Business Compliance Certification Workbook. This workbook is a guide to be used in conjunction with the Small Business Compliance Certification Checklist. It explains many environmental, health and safety requirements that may apply to your company and provides the resources to help you understand them. The key elements of a Sustainable Management System (SMS) and important aspects of Carbon Footprinting are included in the workbook to help your business start thinking about moving beyond compliance and towards a more sustainable business environment.

We encourage you to use the compliance certification checklist and workbook. Incorporate its concepts into your business practices. Periodically evaluate your business practices and the status of all of your environmental health and safety requirements. Utilize an SMS to help you identify opportunities to reduce environmental health and safety impacts for the benefit of your business, your employees and the community.

2.0 Sustainable Development



From recycling to using energy efficient lighting, companies are starting to realize the benefits of having a “Green” corporate culture. Your challenge is to build a successful business and at the same time, manage it in a sustainable and environmentally-friendly way. Going “Green” means thinking about wise business choices within your company to replace, reduce, reuse, and recycle. For example, to the printing industry, this means using vegetable-based or other environmentally-friendly inks. It means recycling press solutions and plates in the printing process. It means being certified by the Forestry Stewardship Council (FSC) or other sustainable forest initiatives or promoting the use of chain-of-custody certified papers (for more information, refer to www.scs-certified.com). Increasing environmental sustainability is one way a business can demonstrate commitment towards corporate social responsibility (CSR) - today’s new sustainability buzzword. Even small and micro businesses can take steps to reduce their impact on the environment by adopting environmentally sustainable habits. Steps such as saving energy for the future by using lower wattage lighting or actually switching to renewable energy sources. Something as simple as turning equipment off when not in use, reduces the energy required by the business and can assist in keeping costs down by reducing energy bills.

Changing business practices is only one piece of the greening puzzle. Just because you can’t afford to install solar panels right now, doesn’t mean you can’t make a big difference. In fact, the time you invest in making a difference may be as valuable to environmental progress as installing compact fluorescent lights (CFLs). What if every small business got involved? Joined a green business organization? Strengthened green requirements for suppliers? Influenced their customers to be more environmentally responsible? Think of ways you can influence others towards sustainable development.

The first step to becoming involved in sustainable development is to choose or formulate the sustainable development principles your business is going to follow. You may choose to follow an existing set of sustainable development principles (search “sustainable development principles” on the internet) or develop your own sustainable development principles. If you prefer to develop your own sustainable development principles, think about incorporating an Environmental Management System (EMS) or a Sustainable Management System (SMS) into your company’s business culture. As you complete the Compliance Certification Checklist, think about strategies to better manage your health and environmental issues and reduce the burden of compliance with the regulatory requirements outlined in

this workbook. Tips for a more sustainable business environment and methods to reduce your carbon footprint are included in Appendix B.

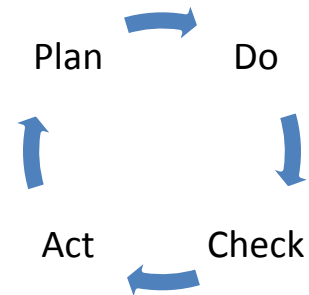
3.0 Sustainable Management Systems (SMS)



An Environmental Management System (EMS) or Sustainable Management System (SMS) is a framework developed by an organization like yours to help improve its environmental performance by taking environmental considerations (also health and safety considerations, if feasible) into account when making business decisions and managing risks. Key elements of an SMS are outlined below. The first step to putting together an SMS is to make a commitment and develop an environmental policy. The second step is to identify activities, products, and services in your business that may impact the environment. The third step is to set goals, objectives and targets for your program. The concept of sustainable development needs to be incorporated into the policies and processes of your business and these philosophies should become a way of doing business in your company.

3.1 What is an SMS Model?

An SMS follows a Plan-Do-Check-Act Cycle, or PDCA. The SMS Model below shows the process of first developing an environmental policy, planning the EMS/SMS, and then implementing it. The process also includes checking the system and acting on it. The model is continuous because an SMS is a process of continual improvement in which an organization is constantly reviewing and revising their system. The Environmental Leadership Program (ELP) at the Colorado Department of Public Health and Environment is an excellent resource for EMS/SMS information and training. Information on this program is available online at www.cdphe.state.co.us/oeis/elp/index.html (refer to Section 5.0 in this workbook).



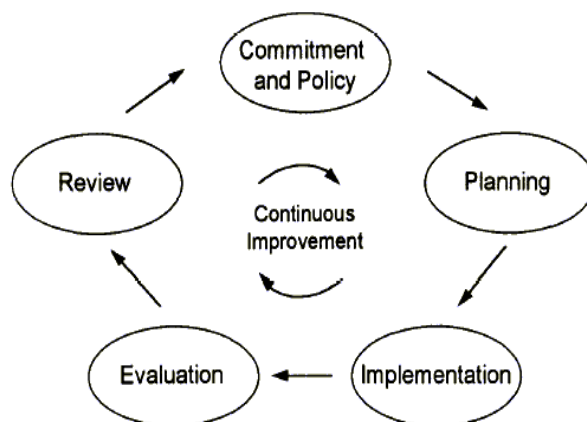
3.2 What are the Key Elements of an SMS?

- Policy Statement - a statement of the organization's commitment to the environment. It is crucial to have buy-in from the bottom up (employees to top management).
- Identification of Significant Environmental Impacts - environmental attributes of products, activities and services and their effects on the environment.
- Development of Objectives and Targets - environmental goals for the company.
- Implementation - plans to meet objectives and targets .
- Training - ensure that employees are aware and capable of their environmental responsibilities to help meet your objectives and targets.
- Management review – it is imperative that top management participate.

EMS/SMS Model

Key SMS Benefits:

- ✓ Improved environmental performance
- ✓ Reduced liability
- ✓ Competitive advantage
- ✓ Improved compliance
- ✓ Reduced costs
- ✓ Fewer accidents
- ✓ Employee involvement
- ✓ Improved public image
- ✓ Enhanced customer trust
- ✓ Meet customer requirements



4.0 The Carbon Footprint

4.1 What is a Carbon Footprint?

Our carbon footprint is the amount of carbon dioxide equivalent that we are directly or indirectly responsible for producing and emitting into the earth's atmosphere. It relates to the amount of greenhouse gases (GHGs) emitted by a human activity or accumulated over the full life cycle of a product or service and the impact these activities have on our environment, and in particular, climate change.

4.2 Background

Energy from the sun drives the earth's weather and climate. The earth absorbs energy from the sun and also radiates energy back into space. However, much of this energy going back to space is absorbed by greenhouse gases in the atmosphere. Because the atmosphere then radiates most of this energy back to the earth's surface, our planet is warmer than it would be if the atmosphere did not contain these gases. Without this natural "greenhouse effect", temperatures would be about 60°F lower than they are now and life as we know it would not be possible

Gases that trap heat in the atmosphere are GHGs. Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities; others (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO₂)**: Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄)**: Methane is emitted during the production and transport of coal, natural gas and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N₂O)**: Nitrous oxide is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated Gases:** Hydrofluorocarbons (HCFCs), perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for [ozone-depleting substances](#) (e.g., CFCs, HCFCs and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”).

EPA’s Climate Change website provides information and data on emissions of greenhouse gases to the earth’s atmosphere and also the removal of GHGs from the atmosphere. For more information on the science of climate change, please visit EPA’s [climate change science home page](http://www.epa.gov/climatechange/science/index.html) at www.epa.gov/climatechange/science/index.html.

During the past century, humans have substantially added to the amount of GHGs in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily carbon dioxide and methane, enhance the natural greenhouse effect and may contribute to an increase in global average temperature (global warming) and related climate changes. On December 29, 2009, EPA finalized the Greenhouse Gas Reporting Rule. More information on this rule will be available in the near future. Information and guidance on this rule and the proposed GHG Tailoring Rule is available on the EPA website at www.epa.gov/climatechange/emissions/ghgrulemaking.html and www.epa.gov/nsr/fs20090930action.html.

4.3 Calculating your Carbon Footprint

A carbon footprint measures the resources your facility consumes, both directly and indirectly. You can measure your impact, or the resources you use, by measuring the amount of greenhouse gases produced in units of carbon dioxide (tons of carbon dioxide equivalent), thus calculating your carbon footprint.

A carbon footprint is calculated in two parts:

- a. The **primary footprint** is a measure of our direct emissions of carbon dioxide (CO₂) from the burning of fossil fuels for electricity, heating and transportation. Your business has direct control of these.
- b. The **secondary footprint** is a measure of the indirect CO₂ emissions from the whole life cycle of products we use – those associated with their manufacture and eventual breakdown.

By measuring your carbon footprint, you can get a better sense of what impact your day-to-day business operations may have on health and the environment. Every small business has the power to make really important changes in this world with simple day-to-day actions. Tools such as EPA’s Greenhouse Gas Equivalency Calculator can be useful in communicating your greenhouse gas reduction strategy, reduction targets or other initiatives aimed at reducing greenhouse gas emissions. This calculator is available online at www.epa.gov/RDEE/energy-resources/calculator.html. Other GHG management tools are listed in Appendix F.

4.4 Reducing your Carbon Footprint

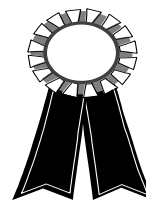
Recommended actions to address climate change can translate into very sensible and cost-saving business practices. Reducing your carbon footprint can also be seen as reducing your energy and resource usage costs and thereby improving the efficiency and lowering the costs of your business. You don’t have to invest in expensive new technologies to reduce your carbon emissions.

The quickest way to reduce your carbon footprint is to save energy. So, it's important to understand exactly how it's being used in your facility. Taking a walk around your business will help you identify any energy that is being wasted and focus on the key areas in which savings can be made. These could include heating, lighting and any machinery that is left on when not being used. Saving energy will also demonstrate your own commitment to reducing carbon emissions and encourage your employees to follow your example.

Walk around your facility at various times of the day and periods during the year. This will help you to see operations firsthand and check whether timers need to be changed or controls need adjusting. Include employees in the walk through. They will know where energy is being wasted and can help spot opportunities to reduce your carbon emissions. It will also make them feel a part of the process right from the beginning. Using a checklist as you walk around will help organize your time. Use the Sustainable Business Checklists in Appendix B to help get you started. As you complete your walk through, you can edit the list and create a checklist that fits into your company's sustainable management system objectives and targets.

To make a sustained contribution, create a plan, keep checking your emissions, create a graph and put it up on the wall for everyone to see as a reminder. Show staff you mean business, then work together to reduce your impact on the environment. You can make it happen.

5.0 Beyond Compliance Awards and Recognition



Colorado Environmental Leadership Program

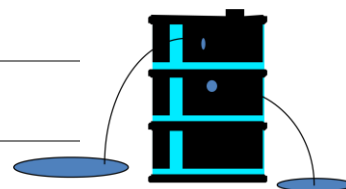
The Colorado Environmental Leadership Program (ELP) is a voluntary program that encourages and rewards superior environmental performers that go beyond the requirements of environmental regulations and move toward the goal of sustainability. We encourage ERP participants to participate in the program.

- Membership in the program is open to all types of organizations and businesses from large corporate entities to small businesses, government agencies, nonprofits and academic institutions. The Colorado Environmental Leadership Program invites the printing & imaging industry to participate in the program.
- To participate in the leadership program, your company must meet the ELP eligibility related compliance requirements and fit within a specific “tier” of the program. (The criteria are listed below).
- In exchange, leadership members are provided recognition, and regulatory and non-regulatory benefits and incentives from the state (incentives are specific for each tier level).

Table 1

Tier	Criteria	Recognition
Bronze Achiever	<ul style="list-style-type: none"> ▪ For entities making significant Environmental achievement(s) in improving the environment of Colorado but do not have a functional Environmental Management System (EMS). ▪ Clean compliance record for one year prior to applying to the program. 	1 year (not renewable)
Silver Partner	<ul style="list-style-type: none"> ▪ For entities who are seeking the Gold Level tier (may or may not have a functional EMS), and are COMMITTED towards meeting the Gold criteria within an agreed upon timeframe, not to exceed three years. ▪ Must meet requirements for “beyond-compliance” activities. ▪ Clean compliance record for one year prior to applying to the program. 	3 year goal
Gold Leader	<ul style="list-style-type: none"> ▪ Currently the Highest Level of State Recognition ▪ Continual environmental improvement goals that are verifiable and measurable (beyond-compliance). ▪ Working towards the goal of sustainability. ▪ Fully functional Environmental Management System. ▪ Clean compliance record three years prior to applying to the program. ▪ Federal equivalent – EPA’s National Performance Track Program. 	3 years (renewable)
<p>For more information go to www.cdphe.state.co.us/oeis/elp/index.html or call 303-692-3477</p>		

6.0 Hazardous Waste



As a “Green” business, you should be thinking of ways to reduce or eliminate the generation of hazardous waste from your operations. If you generate hazardous waste, you must manage your hazardous wastes in a safe and environmentally responsible manner. Federal and state regulations place the burden on you as the generator to properly identify and dispose of hazardous waste. The generator is ultimately responsible for the waste from “cradle to grave” and can be held liable for improper management of hazardous waste.

6.1 Do You Generate Hazardous Waste?

As a waste generator, it is your responsibility to determine if the waste is hazardous or not. A waste is classified as hazardous if it exhibits any of the characteristics specified by EPA/State regulations or is specifically listed as a hazardous waste in EPA/State regulations (refer to Appendix C).

The classification of a waste is done by either testing the waste using approved methods or using knowledge of the process and materials. In either case, you need to document the waste determination by keeping a record of the results. If the determination is based on test results, you need to keep the lab report. If you apply process knowledge, you need to keep product data sheets, Material Safety Data Sheets (MSDS) or other similar information. In many instances, waste disposal companies will provide you with a waste profile in which a determination of waste classification can be based upon. If you decide to use this information, you need to find out if the waste was actually tested or if the profile was based on a review of the waste from MSDSs or other information.

It is important to understand that in some cases, testing may be required due to the limitations of the information provided on technical data sheets and MSDSs. An MSDS only has to list chemicals that pose a threat to human health and safety that are in concentrations greater than 1% and for carcinogens, 0.1%. A 1% concentration is equivalent to 10,000 parts per million or ppm (1,000 ppm for a carcinogen); therefore, some ingredients in a product that have the potential to generate a hazardous waste may not be listed on the MSDS. If you have questions, contact the Small Business Assistance Program.

6.2 Hazardous Waste Generator Status



Conditionally Exempt Small Quantity Generator (CESQG) – generates no more than 100 kilograms (about 220 pounds or 25 gallons) of hazardous waste and no more than 1 kilogram (2.2 pounds) of acutely hazardous waste in any month.

Small Quantity Generator (SQG) – generates more than 100 kilograms but less than 1,000 kilograms (between 220 and 2,200 pounds or about 25 to 275 gallons based on a density of 8 pounds per gallon) of hazardous waste and no more than 1 kilogram (2.2 pounds) of acutely hazardous waste in any month.

Large Quantity Generator (LQG) – generates 1,000 kilograms (~ 2200 pounds or about 275 gallons based on a density of 8 pounds per gallon) or more of hazardous waste or more than 1 kilogram (2.2 pounds) of acutely hazardous waste in any month.

Your generator status is based on how much hazardous waste (in kilograms) your company generates in each calendar month. Refer to the example in Table 2 below.

Table 2
Monthly Hazardous Waste Generation – Printing Facility Example

Activity	Waste	Hazardous?	Why?	Monthly Quantity (gal)	Monthly Quantity (lb)
Pressroom	Cleaning solvents	Yes	Ignitable (FP <140°F), F-listed	30	250.2
Pressroom	Vegetable-based ink	No	Not toxic or ignitable	Not counted	-
Pressroom	Solvent-based ink	Yes	Ignitable (FP < 140°F)	10	83.4
Pressroom	Specialty Ink	Yes	Toxic (heavy metals)	2	16.68
Post press	Solvent-based adhesive	Yes	Ignitable (FP <140°F), Toxic	5	41.7
Total Hazardous Waste Generated in One Month = Small Quantity Generator				47	392 lb (178 kg)

Hint: Half of a 55-gallon drum of waste with a density similar to water (8.34 pounds per gallon) weighs about 220 pounds (100 kilograms). Similarly, 300 gallons of this same waste weighs about 2,200 pounds (1,000 kilograms). Gallons of waste x 8.34 (weight of water) = pounds of waste. 1 kilogram = 2.2 pounds.

6.3 Generator Status Change Requirements

A hazardous waste generator can change categories. The category is related to the cumulative amount of hazardous waste generated in any month and this amount may vary from month to month.

If your generator status changes, you must submit a revised “Colorado Hazardous Waste Notification Form” to the Hazardous Materials and Waste Management Division (HMWMD). It is wise to select the highest generator status to which you might be subject even if you are in a lower category some of the time.

6.4 Regulated Waste Notification Requirements

Who Must Notify

Small Businesses that generate or transport hazardous wastes, handle used oil, burn hazardous waste in a boiler or industrial furnace, recycle hazardous waste, or manage large quantities of universal waste must notify the HMWMD of these activities.

Conditionally Exempt Small Quantity Generators (CESQGs) that generate waste codes F001, F002, F004, and/or F005 (halogenated and non-halogenated solvents) are required to notify the HMWMD and obtain an EPA identification number. CESQGs that generate less than three (3) gallons per calendar year of these waste types are exempt from this notification requirement.

Application Process

An authorized representative of your facility should complete the *Colorado Notification of Regulated Waste Activity Form* and submit a signed copy to the Hazardous Materials Waste Management Division’s Notification Coordinator. The Department will issue a unique EPA Identification Number and notify the owner or operator as soon as practicable. An EPA identification number is not a permit, it is a number

issued by the State and EPA to identify a facility for hazardous waste management purposes. The notification form is available on the web at www.cdphe.state.co.us/hm/notification.htm or from the HMWMD. The EPA identification number is location specific; therefore, if you have several facilities at different locations, every one that generates hazardous waste will need its own unique EPA identification number.

Duration of the Notification

The notification and EPA Identification Number remain valid until the Department is notified in writing that the facility has changed location, has changed ownership, no longer manages hazardous waste or until the category or general description of their activities changes.

6.5 Hazardous Waste Fees

Notification Fees

Notification fees and annual fees are subject to change on an annual basis. Current information on hazardous waste notification fees is available online at www.cdphe.state.co.us/hm/feenotice.htm. The fee **must** accompany the completed and signed notification form. The Department will not process the notification without the fee.

Annual Fees

Facilities that generate hazardous waste are billed annually by the HMWMD for the Generator and Hazardous Waste Commission fees. Generator fees are subject to change on an annual basis. Current information on fees is available at www.cdphe.state.co.us/hm/feenotice.htm.

6.6 Hazardous Waste Accumulation Requirements

Accumulation of hazardous waste is different than “storage”. Accumulation time is the time allowed under the Resource Conservation and Recovery Act (RCRA) to accumulate hazardous waste before you are required to transport the hazardous waste to a permitted treatment, storage and disposal facility (TSDF). The allowable accumulation time period depends on your generator status. As a generator, you are required to ship hazardous waste often enough to meet the generator accumulation limits that apply to your generator status. The time period starts from the date marked on the drum or tank known as the accumulation start date. The accumulation start date is the date you mark on the container when you add the first drop of a hazardous waste into it. Accumulation start dates do not apply to CESQGs.



Conditionally Exempt Small Quantity Generator (CESQG) – No accumulation time requirements. Must not accumulate 1000 kilograms (2200 pounds) or more of hazardous waste (about five (55) gallon drums) or 1 kilogram (2.2 pounds) of acutely hazardous waste onsite at any one time.

Small Quantity Generator (SQG) – Must not accumulate hazardous waste for more than 180 days from the date on drum or tank (270 days if the generator must ship farther than 200 miles from the facility). Must not accumulate more than 6,000 kilograms (13,000 pounds) or about thirty (55) gallons drums) of hazardous waste onsite at any one time.

Large Quantity Generator (LQG) – Must not accumulate hazardous waste for more than 90 days from the date on drum or tank. A LQG has no quantity limits.

Note: Generator status is based upon the volume of hazardous waste that is generated in a calendar month and not on the amount of waste accumulated onsite. For example, a CESQG that exceeds the 2,200 pound onsite limit is subject to the SQG requirements until that volume of waste is shipped offsite, but is not a SQG.

6.7 Summary of Generator Requirements

6.7.1 Requirements for Conditionally Exempt Small Quantity Generators (CESQGs)

- Identifies all hazardous waste generated.
- Determines hazardous waste generator status.
- Generates no more than 100 kilograms (about 220 pounds or 25 gallons) of hazardous waste and no more than 1 kilogram of acutely hazardous waste in any calendar month.
- Obtains a site-specific generator E.P.A. ID number, if required.
- Operate and maintain your facility in a manner to minimize the possibility of fire, explosion or release of hazardous waste.
- Accumulates no more than 1000 kilograms (about 2200 pounds or five (55) gallon drums of hazardous waste onsite at any one time.
- Accumulates no more than 1 kilogram (about 2.2 pounds) of acutely hazardous waste onsite at any one time.
- Treats hazardous waste on site or ensures delivery to an authorized disposal facility. Uses a licensed transporter to ship hazardous waste offsite. *Note: Solid waste landfills are not allowed to accept any hazardous waste for disposal from CESQGs.*
- Uses a hazardous waste shipping manifest to ship CESQG hazardous waste (recommended).
- Attaches the final copy of the manifest to the original manifest copy (recommended). This final copy verifies delivery of hazardous waste to an authorized disposal facility.

6.7.2 General Requirements for both SQGs and LQGs

General requirements common to both SQGs and LQGs are listed in this section. Requirements specific to SQGs and LQGs are listed in Sections 6.7.3 and 6.7.4 below.

- Identifies all hazardous waste generated.
- Determines your hazardous waste generator status.
- Obtains a site-specific generator E.P.A. ID number.
- Ensures hazardous waste is not disposed of improperly on the ground, to the sanitary sewer, storm drains, or into the municipal trash.
- Properly stores hazardous wastes and pays attention to the hazardous waste accumulation requirements for your generator status.
- Clearly labels each container with the words "Hazardous Waste". Your hazardous waste transporter should be able to assist you in obtaining the correct hazardous waste labels. Hazardous waste labels and signs are available online at www.cdphe.state.co.us/hm/complianceaids.htm.



- Ensures containers and tanks of hazardous waste are in good condition and closed at all times unless filling or draining. Containers cannot be stored in a manner to cause a rupture or leak.
- Uses a licensed transporter to ship hazardous waste and ensures that the waste is shipped to an authorized disposal facility.
- Segregates incompatible wastes.
- Marks the date when accumulation began on all hazardous waste containers.
- Inspects storage areas weekly. Inspects containers for leaks, deterioration, and compatibility with the hazardous waste stored inside. Containers must have adequate aisle space and be properly closed and labeled.
- Maintains a hazardous waste storage area or satellite accumulation area according to Figure 1 (refer to Section 6.8.1).
- Uses a properly completed hazardous waste manifest when shipping hazardous waste offsite.
- Retains Land Disposal Restriction (LDR) forms, waste analysis data, manifests and other documentation for at least 3 years. (It is recommended that you keep these documents indefinitely).

6.7.3 Requirements for Small Quantity Generators (SQGs)

- Follows the General Requirements for both SQGs and LQGs in Section 6.7.2 AND:
- Generates more than 100 kilograms but less than 1,000 kilograms (between 220 and 2,200 pounds or between 25 and 250 gallons) of hazardous waste and no more than 1 kilogram (about 2.2 pounds) of acutely hazardous waste in any calendar month.
- Must not accumulate more than 6,000 kilograms (13,000 pounds or about thirty (55) gallons drums) onsite at any one time.
- Ships waste offsite within 180 days (270 days if the generator must ship waste farther than 200 miles from the facility) of the accumulation date on the tank or container. A one-time 30-day extension is available on a case-by-case basis.
- Receives a copy of the signed manifest from the designated disposal facility within 60 days of the waste being accepted by the transporter. If this copy is not received in 60 days, you must submit a legible copy of the manifest and indicate that the copy has not been received to the HMWMD.
- Prepares for emergencies in accordance with Section 6.9.
- Ensures that employees are provided with hazardous waste training including waste handling and emergency response procedures relevant to their job responsibilities. Documentation of training must be retained onsite for all current employees.

6.7.4 Requirements for Large Quantity Generators (LQGs)

- Follows the General Requirements above for both SQGs and LQGs in Section 6.7.2 AND:
- Generates 1,000 kilograms (about 2,200 pounds or about 250 gallons) or more of hazardous waste and/or more than 1 kilogram (about 2.2 pounds) of acutely hazardous waste in any calendar month.

- Submits a Biennial Report to the Colorado HMWMD by March 1 of each even numbered year or upon request. You must keep a copy of this report on file for at least three years.
- Ships waste offsite within 90 days of the accumulation start date on the tank or container. A one-time 30-day extension is available on a case-by-case basis.
- Has no limit on the quantity of hazardous waste stored onsite at any one time.
- Receives a copy of the signed manifest from the designated disposal facility within 35 days of the waste being accepted by the transporter. *If this copy is not received in 45 days, you must submit an exception report to the HMWMD.*
- Develops and maintains a formal written Emergency Response/Contingency Plan for the facility.
- Provides facility hazardous waste personnel with classroom and on-the-job training regarding hazardous waste requirements. Employees must receive training within six months of new or changed employment and receive annual refresher training thereafter.
- Creates a job title and description for each position at the site related to hazardous waste management and the name of the employee filling each job.
- Maintains records onsite for current personnel and past personnel employed within the last three years.

6.8 Hazardous Waste Storage Requirements

6.8.1 Requirements for Waste Storage and Satellite Accumulation Areas

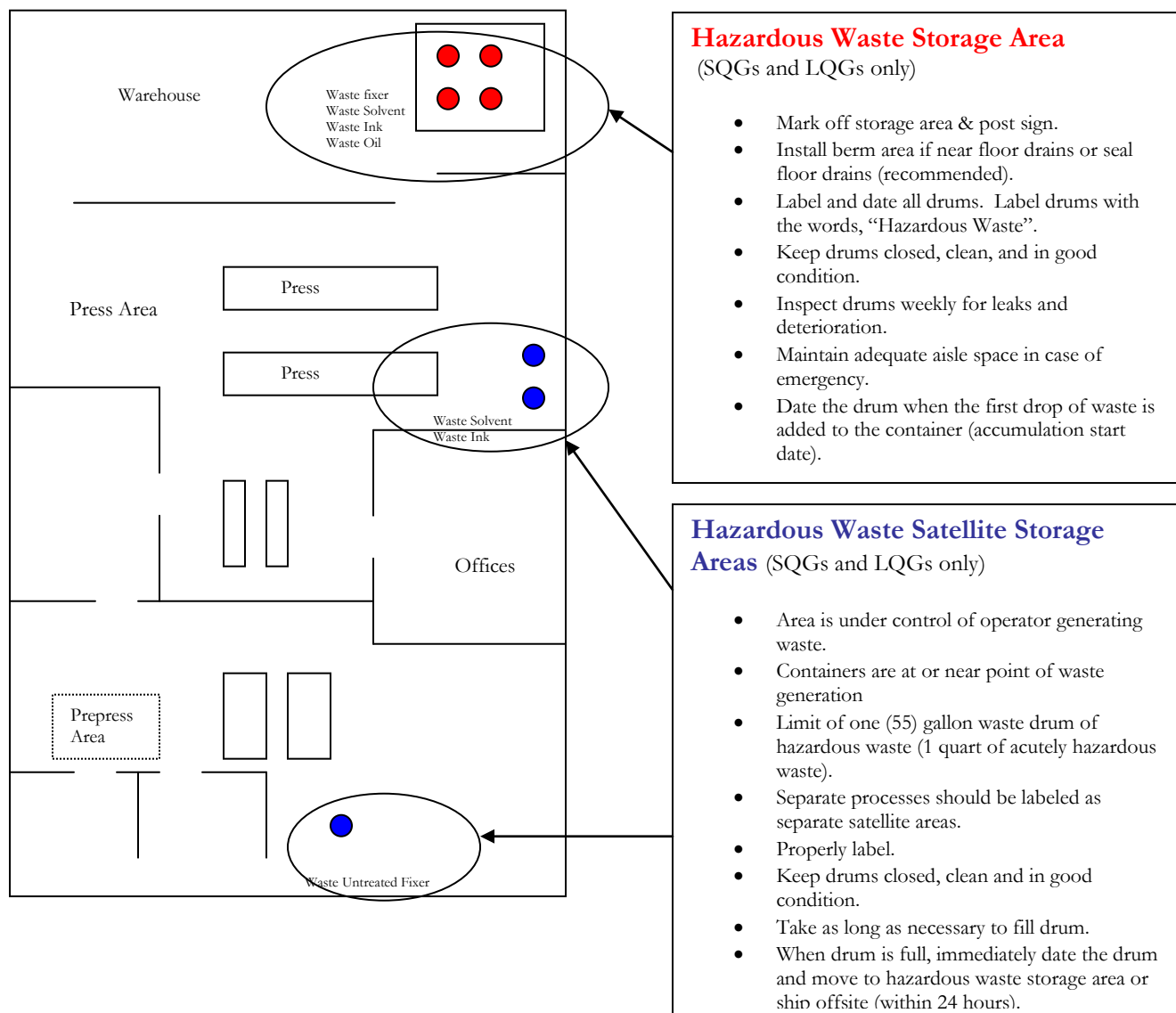
Hazardous waste regulations allow you to store hazardous waste in a designated hazardous waste storage area and/or at or near workstations where the hazardous waste is generated. Waste storage areas at or near workstations are called Satellite Accumulation areas. Refer to Figure 1 for storage requirements for Hazardous Waste and Satellite Accumulation areas for SQGs and LQGs.

6.8.2 Storage of Hazardous Waste in Tanks

Specific requirements for storage of hazardous waste in tanks are listed in the "*Guide to Generator Requirements of the Colorado Hazardous Waste Regulations*". This document is available online at www.cdphe.state.co.us/hm/handbk.pdf.

6.9 Emergency Response Requirements for SQGs and LQGs

- Operate and maintain your facility in a manner to minimize the possibility of fire, explosion or release of hazardous waste.
- Designate an Emergency Coordinator. The Emergency Coordinator must be onsite or on call for emergency response 24 hours a day. Employees must be familiar with and be able to identify the name of the Emergency Coordinator.
- Place a telephone or communication system near areas where hazardous waste is stored or generated to alert employees in case of an emergency.

Figure 1**6.9 (Continued)**

- Post the following information by the telephone (SQGs). (Refer to Appendix C for an example).
 - Name and telephone number of the emergency coordinator.
 - Telephone number of the fire department (unless your facility has a direct alarm).
 - Location of fire extinguishers, spill control materials, and if present, the location of the fire alarm.
- Post evacuation route maps and exit signs in areas where hazardous wastes are handled or stored.
- Have portable fire extinguishers and/or water supply for fires. Ensure adequate water pressure for the sprinklers. (Adequate water pressure can be determined during the annual sprinkler test required by OSHA and the local fire department).

- Have facility communications or alarm systems, fire protection equipment, spill-control equipment, and decontamination equipment tested and maintained as necessary to assure its proper operation in case of emergency.
- Maintain adequate aisle space between containers and tanks to allow unobstructed movement in case of an emergency.
- Make arrangements for emergency response with local authorities (police, fire, local health departments, and hospitals).

6.10 Top Ten Hazardous Waste Violations

	Top Ten Hazardous Waste Violations
<input type="checkbox"/>	Failure to make a correct hazardous waste determination. This is most common for F-listed rags.
<input type="checkbox"/>	Improper disposal of hazardous waste. This violation typically results from the failure to make a correct hazardous waste determination. Failure to recognize a hazardous waste leads to the improper disposal of that waste.
<input type="checkbox"/>	Failure to post emergency response information by the telephone (SQG).
<input type="checkbox"/>	Failure to provide hazardous waste training (SQG and LQG).
<input type="checkbox"/>	Failure to properly label containers of hazardous waste with the words "Hazardous Waste" (SQG and LQG).
<input type="checkbox"/>	Failure to properly mark containers of hazardous waste with an accumulation start date (SQG and LQG).
<input type="checkbox"/>	Failure to keep containers of hazardous waste closed except for when it is necessary to add or remove waste from the container.
<input type="checkbox"/>	Failure to conduct weekly inspections of areas that are used for accumulation of hazardous waste (LQG and SQG).
<input type="checkbox"/>	Failure to develop a complete contingency plan (LQG).
<input type="checkbox"/>	Failure to provide annual hazardous waste refresher training (LQG).



7.0 Other Wastes

7.1 Used Oil

Typically small businesses generate used oil from operating and maintenance processes. There are specific requirements for the storage and transport of used oil. The requirements for used oil are outlined in the document, "Guide to Generator Requirements of the Colorado Hazardous Waste Regulations" available online at www.cdphe.state.co.us/hm/handbk.pdf. A summary of these requirements is listed below:

- Containers and tanks used to store used oil must be in good condition, not leaking, and labeled with the words "Used Oil".
- Containers of used oil stored outdoors must be kept closed and properly labeled.
- Used oil must be shipped offsite by transporters who have obtained an EPA identification number (for information, refer to HMWMD Resources in Appendix F) unless you self-transport less than 55 gallons of your facility's used oil to a used oil collection center.
- Mixtures of used oil and listed hazardous waste (e.g., F-listed hazardous wastes) are subject to regulation as hazardous waste rather than used oil.
- Mixtures of used oil and characteristic hazardous waste that do not exhibit the characteristic are regulated as used oil (e.g., hazardous waste that is ignitable but does not demonstrate this characteristic in the used oil mixture).
- Mixtures of used oil and conditionally exempt small quantity generator hazardous waste are regulated as used oil.
- Mixtures of used oil and non-hazardous solid waste are regulated as used oil if the mixture will be burned for energy recovery.
- Mixing used oil and hazardous waste with the purpose of managing it as used oil could be considered treatment and may be subject to permitting requirements.
- Develop a spill cleanup plan that outlines how you will stop the release of used oil to the environment in the event of an accident. If you have a release and are not subject to the requirements of State and Federal storage tank reporting requirements, you should:
 - Stop the release;
 - Contain the released used oil;
 - Clean up and manage the released used oil, and;
 - Take measures to prevent future spills or leaks.

7.2 Universal Waste

Colorado has adopted streamlined hazardous waste management regulations that govern the collection and management of "universal wastes". Universal waste regulations reduce the management requirements for certain wastes to encourage recycling and proper disposal.

7.2.1 List of Universal Wastes

- Waste batteries (except lead acid batteries)
- Certain pesticides
- Mercury-containing devices (the elemental mercury must be housed within an outer metal, glass or plastic casing)
- Aerosol cans that contain hazardous waste when discarded
- Lamps or the bulb or tube portion of an electric lighting device
- Electronic devices and components derived from the disassembly of electronic devices (e.g., computers, cell phones, monitors, televisions)

7.2.2 Requirements for Small Quantity Handlers of Universal Waste

- Accumulates less than 5,000 kilograms (about 11,000 pounds) of universal waste (the total of all types of universal waste on-site at any one time).
- Accumulates universal waste for no longer than one year unless it is necessary to do so to facilitate proper recovery, treatment or disposal (you must be able to prove it was necessary). You must be able to demonstrate accumulation times.
- Prohibited from on-site disposal or treatment (except as provided in the Colorado Hazardous Waste Regulations under 6 CCR 1007-3, Section 273.11).
- Not required to notify the Colorado Department of Public Health and Environment of universal waste management activities.
- Manages universal waste in a manner to prevent releases to the environment.
- Labels or marks the universal waste or the container with “Universal Waste – *type of waste*” or “Waste – *type of waste*” or “Used – *type of waste*”.
- Trains all employees who handle or manage universal waste on proper handling and emergency procedures appropriate to the types of universal waste handled.
- Immediately contains all releases of universal wastes. If the release is hazardous waste, it must be managed as such.
- Ships to an authorized facility e.g., another universal waste handler, a permitted hazardous waste treatment, storage and disposal (TSD) facility, a legitimate recycler or a foreign destination. It is recommended (but not required) that records of universal waste shipments be kept.

7.2.3 Requirements for Large Quantity Handlers of Universal Waste

- Accumulates more than 5,000 kilograms (about 11,000 pounds) of universal waste (total of all types of universal waste) on-site at any one time.
- Retains “Large Quantity” designation through the end of the calendar year in which the 5,000 kilogram limit is met or exceeded.

- Prohibited from on-site disposal or treatment of universal waste except as provided in 6 CCR 1007-3, Section 273.12.
- Manages universal waste in a manner to prevent releases to the environment.
- Labeling, accumulation time limits, training, responses to releases and off-site shipping requirements are the same as a Small Quantity Handler of Universal Waste (refer to Section 7.2.2 above).
- Records of universal waste shipments must be maintained for at least three years.

7.3 Reusable Rags, Shop Towels and Absorbents

Rags, shop towels and other reusable absorbents that are contaminated with listed hazardous waste or that exhibit a hazardous waste characteristic are considered to be exempt from the provisions of the Colorado hazardous waste regulations if they are picked up, cleaned and delivered back to your facility by a laundering service that uses a solvent-based dry cleaning process to clean the rags or a water-washing commercial laundry with all appropriate waste water discharge permits from the local municipal wastewater treatment plant. Commercial dry cleaning is preferred because this process enables recovery and destruction of the contaminants removed during the dry cleaning process. Materials contaminated with solvents, resins, lacquers, etc., cleaned in commercial water-washing facilities are simply transferring the contaminants to the water that is discharged to the sanitary sewer. The water is then treated by the municipal wastewater treatment facility. Laundering may be done at your facility only with the written approval of the local sewer district. Reusable absorbent materials cleaned by such contractual/closed loop cleaning services would not have to be managed as hazardous waste when on site; do not need to be shipped under a manifest to a licensed hazardous waste treatment, storage and disposal facility and do not count toward the total monthly on site generation of hazardous waste. A copy of the current laundering contract should be maintained in your operating files.



Safe handling and storage of the shop towels and reusable absorbents is your responsibility. They must be stored in sealed and labeled waste containers. The rags and wipes are not exempt from the hazardous waste regulations if free liquid hazardous waste is dumped onto the absorbents or if the absorbents are saturated with free liquid hazardous wastes. One way to ensure that no free liquids are present is to wring out the soiled materials and collect the released liquid for proper hazardous waste handling and disposal. If you are unsure as to the type of waste involved, you should make a hazardous waste determination prior to disposal.



7.4 Aerosol Cans

Aerosol cans that are still in use or that contain useable product are not yet considered wastes. Aerosol cans that are empty or that contain materials that are not considered hazardous wastes may be managed as solid waste and can be recycled or sent to a solid waste landfill. You are responsible for determining if your aerosol cans are hazardous. Sometimes aerosol products must be discarded before they are completely empty e.g., the spray mechanism no longer operates, the propellant is spent or the product is no longer used. The contents remaining in an aerosol can would not be considered spent and therefore could not carry the F-codes for spent solvents. They may, however, carry a P- or U-code for unused chemical products. If your facility uses a lot of aerosol cans, you may want to purchase a crushing device that punctures and crushes the cans for recycling, expelling the liquid product into a sealed container that is properly labeled for disposal. If the aerosol cans contain a hazardous waste, you may choose to manage them with the reduced requirements for Universal waste (Section 7.2) or as a hazardous waste (Section 6.0). Managing aerosol cans as universal waste is most beneficial to small and large quantity

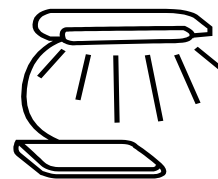


generators of hazardous waste or CESQGs that would otherwise be small quantity generators if they did not manage some of their wastes as universal wastes.

7.5 Lamp Wastes

Many commonly used lamps contain small amounts of mercury and other metals. Such lamps include fluorescent, compact fluorescent, high-pressure sodium, mercury vapor and metal halide lamps. Used lamps are considered a hazardous waste if the material exhibits the characteristic of toxicity for these metals.

According to the U.S. EPA, testing of burned-out fluorescent lamps showed that a high percentage of the lamps tested exhibited the toxicity characteristic for metals, particularly mercury.



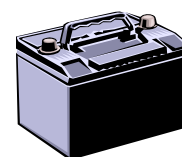
Non-residential sources must determine if their lighting wastes are hazardous wastes. If, using the Toxicity Characteristic Leaching Procedure (TCLP) test, the extract from a representative sample of the waste contains mercury at a concentration greater than or equal to the maximum contaminant concentration of 0.2 ppm (mg/l), the lamps would be hazardous waste. This waste would carry the hazardous waste code D009. Many mercury-containing lamps also contain elevated levels of lead and may exhibit the toxicity characteristic for lead (TCLP > 5 ppm lead). Such wastes would also carry the hazardous waste code D008. Your business must follow Colorado's Universal or hazardous waste regulations for proper management and disposal applicable to your generator category. If the lighting wastes have not been tested to show that they are not hazardous, or if the generator doesn't have other supporting data, then the generator should assume the lamps are hazardous and manage them as Universal or Hazardous waste. The generator may use data obtained from the manufacturer, other generators or published studies to assist with their hazardous waste determination.

Several lighting manufacturers now produce toxicity test-compliant versions of their products. Testing done by the manufacturers demonstrates that these lamps do not tend to fail the toxicity test for metals and can therefore be managed as non-hazardous solid waste or as Universal waste. Toxicity test-compliant lamps are clearly marked with either green printing or green end caps to distinguish them from other lighting products. Mercury-containing lighting wastes from non-residential sources that do not fail the toxicity test may be disposed of in a properly managed municipal solid waste landfill, handled as Universal Waste or sent to a legitimate lamp recycler. Landfills and recyclers may impose their own restrictions to regulate incoming wastes in accordance with local rules or company guidelines. Municipal solid waste landfills in Colorado are not permitted to accept any quantity of non-residential hazardous waste for disposal.

7.6 Batteries

7.6.1 Lead Acid Batteries

Frequently in small businesses, batteries are used in universal power supplies, forklifts, delivery trucks and other vehicles. Each battery contains about 18 pounds of lead and one gallon of highly corrosive sulfuric acid electrolyte solution. Smaller sealed lead-acid batteries are used in computers and cellular telephones and are managed differently. Management of vehicle-type batteries are specifically addressed in the Colorado Hazardous Waste regulations (6 CCR 1007-3 Section 267 Subpart G). A battery is "reclaimed" if it is processed to recover the lead and sulfuric acid solution. If your business regenerates spent lead-acid batteries by recharging them or replacing the electrolyte solution, and/or you generate, transport, collect or store spent lead-acid batteries but do not reclaim them, you are not subject to the hazardous waste regulations (6 CCR 1007-3 Section 267.8(a)). You are responsible for storing the batteries in a way that prevents releases of hazardous chemicals to the environment and to ultimately send them to a legitimate recycling facility or permitted hazardous waste disposal facility. Lead-acid batteries need not be labeled and can be stored on a pallet until picked up for recycling.



7.6.2 Other Batteries

If you don't already have one, your company should consider developing a battery-recycling program. Mercury-oxide, Silver-oxide, and Ni-Cad batteries are the most easily recycled batteries due to metals recovery. Batteries such as high mercury alkaline and carbon-zinc, zinc-air, and lithium contain smaller amounts of metals are not as readily recycled.



NiCad, silver-oxide, mercury-oxide, lithium ion, zinc-air, zinc-carbon, nickel metal hydride, sealed lead-acid and some alkaline batteries that are used in small businesses for pagers, cell phones and computers are hazardous wastes when disposed of. Silver-oxide, mercury-oxide, zinc-air, and many zinc-carbon batteries can contain significant amounts of mercury. NiCad batteries contain 10-15% cadmium per cell, while lithium batteries may be reactive characteristic wastes. Battery identification is important in determining if it is hazardous and in selecting the proper disposal method. It is a good management practice to keep the packaging materials for batteries and to minimize the variety of batteries purchased to simplify identification and management of battery wastes. If you have determined that your batteries are hazardous waste because they contain heavy metals and corrosive solutions, do not dispose of them in the trash. Store them safely in an area protected from extreme temperatures until you are able to dispose of them properly. Each battery should be labeled as "Waste Battery", "Used Battery" or "Universal Battery" or put into an accumulation container that is in good condition. If the batteries are placed into a container, only the container needs to be labeled. If these batteries are not recycled, they must be managed and disposed of as Universal waste (refer to Section 7.2) or hazardous waste (Section 6.0). Guidance for handling and disposal or recycling of batteries is available online at www.cdphe.state.co.us/hm/battery.pdf.

7.7 Computer and other Electronic Wastes

Electronic equipment like computer monitors, central processing units (CPUs), scanners, and cell phones contain a number of hazardous constituents such as lead, mercury, arsenic, cadmium, chromium and silver. Many of these constituents are found on the circuit boards or in the glass. CPUs also contain a battery such as nickel-cadmium, lithium or sealed lead acid. These constituents are not a concern while the equipment is in use, but if disposed of in a landfill, harmful chemicals can leach out and contaminate groundwater and soil.



Disposal of waste electronics from your business is regulated as hazardous waste in Colorado. The most recent data available demonstrates that cathode ray tubes (CRTs) from color monitors and color televisions consistently exceed the regulatory limit for lead. As a result, color monitors and color televisions from your business that are destined for disposal must be managed as Universal waste (Section 7.2) or Hazardous waste (Section 6.0), unless you have tested your equipment to show that it is not hazardous or if you have other supporting data from the manufacturer. Monochrome monitors (amber, green or black and white) do not contain significant amounts of lead or other metals because of the way they were manufactured; therefore, you can, although it is discouraged, dispose of monochrome monitors into a dumpster. Recycling of electronic wastes should become, if it isn't already, a part of your sustainable business practices.

The state of Colorado strongly encourages the reuse, refurbishment or disassembly for materials recovery (collectively called "recycling") of end-of-life computer equipment instead of disposal of these materials. More information on computer and electronic waste is available online at www.cdphe.state.co.us/hm/electronics/index.htm.



8.0 Air Emissions

Some small businesses emit air pollutants from their operations that are regulated by the Colorado Department of Public Health and Environment Air Pollution Control Division (APCD). Depending on the type and amount of air pollutants emitted, your company may have to report your air emissions or obtain an air permit. It is important that you make this determination prior to start up of your business because you cannot operate without a valid Air Pollutant Emission Notice (APEN) or air permit, if required (refer to Section 8.1). Emissions of volatile organic compounds (VOCs) constitute a large percentage of releases from small businesses in Colorado. Some of these VOCs are also hazardous air pollutants (HAPs).

Volatile organic compounds (VOCs) are chemicals that contribute to the formation of ground-level ozone, a component of smog by evaporation from chemicals used in printing and other industries. Although ozone is needed in the upper atmosphere, in the lower atmosphere, ozone contributes to air pollution and can impact public health. Specific reporting requirements for VOCs are outlined in Colorado Regulation No. 3 and Regulation No. 7. These regulations are available online at www.cdphe.state.co.us/ap/regoverview.html.

Hazardous air pollutants (HAPs) are compounds that have been included on the Environmental Protection Agency's (EPA) list of 188 chemicals that can have detrimental effects on humans and the environment. The list of HAPs regulated by EPA and Colorado and the method for identifying HAP reporting thresholds is maintained in Colorado Regulation No. 3, Appendix A and B. The HAP list is available online at www.cdphe.state.co.us/ap/regoverview.html and is included in Appendix D of this workbook. Check the "List of HAPs and Method for Identifying HAP Reporting Thresholds" to determine if your business emits listed HAPs and to determine if they are reportable. Check your chemicals by name and chemical abstract system number to confirm if they are or are not listed hazardous air pollutants.

Negligibly Reactive VOCs (NRVOCs) such as acetone, methylene chloride, methyl acrylate, t-butyl acetate, and 1,1,1-trichloroethane, propylene carbonate, dimethyl carbonate are among chemicals not regulated as VOCs because they contribute little to ozone formation in our lower atmosphere. NRVOCs should not be included in your VOC emission calculations although they still could be reportable as HAPs. The list of NRVOCs can be found in the Colorado Common Provisions Regulation, 5 CCR 1001-2 at www.cdphe.state.co.us/regulations/airregs/100102aqcccommonprovisionsreg.pdf. The NRVOC list is also included in Appendix D of this workbook. Please note that methane is a listed NRVOC but still must be considered when calculating carbon emissions under the Greenhouse Gas Reporting Rule, if required. Refer to Section 4.2 for more information.

Your facility may also have boilers, heaters, dryers and/or air pollution control equipment (e.g., a thermal oxidizer). Combustion of fossil fuels like natural gas and fuel oil produce criteria pollutants such as nitrogen oxides, sulfur oxides, carbon monoxide, particulate matter and greenhouse gases. Emissions from this type of equipment may be reportable and should be considered when looking at potential air emission sources from your facility. A General Air Pollutant Emission Notice (APEN) form is typically submitted for these types of sources, if required.

8.1 Air Pollutant Emission Notices (APENs)

In Colorado, if your facility has or will be emitting air pollutants above certain reporting levels (in tons per year), you must submit an Air Pollutant Emission Notice (APEN) to the Colorado Air Pollution Control Division (APCD). Table 3 outlines the APEN and Permit reporting levels for VOCs and other air pollutants. Facilities in areas designated as being in attainment for ozone in Colorado can follow the less stringent reporting requirements. Facilities located in areas designated as being in non-attainment for ozone (out of compliance with the National Ambient Air Quality Standards or NAAQS for ozone) will be required to follow the more conservative reporting levels as outlined in Table 3 below.

On November 20, 2007, the Denver-metropolitan and North Front Range areas of Colorado were designated by the EPA as non-attainment for ozone (VOCs and Nitrogen oxides as precursor pollutants to ozone formation). The nine-county area known as the 8-hour ozone nonattainment area includes the counties of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Larimer, Jefferson, and Weld. A chronology of attainment status in Colorado and a map of the attainment and non-attainment areas is available in Appendix D of this workbook. The map is also available online at www.cdphe.state.co.us/ap/images/ozoneareamap.gif.

APEN reporting thresholds are listed in Regulation No. 3, Part A, II.B.3. If your calculated emissions meet or exceed the thresholds listed in Table 3, you must submit an Air Pollutant Emission Notice (APEN) form. The General and Specialty APEN forms are available online at www.cdphe.state.co.us/ap/downloadforms.html. APENs on this site are listed by type of business or air emissions source. Emission sources include both individual pieces of equipment (e.g., paint booths, generators, boilers) and activities that release air pollutants (e.g., parts washing, printing, solvent cleanup, adhesive applications). For example, a printing facility would submit the form titled, "Print Shops, Air Pollutant Emission Notice (APEN) and Application for Construction Permit". A printing facility would typically submit this Specialty APEN and also submit individual APEN forms for reportable air emissions from equipment such as a generator (Specialty APEN form for reciprocating engines), oven or boiler (General APEN form) as required.

Once the APEN has been submitted to the Air Division, it is generally valid for five years assuming no changes in processes, emissions, control equipment, work practices or ownership. You must list current equipment associated with your air emissions when you file the APEN form (e.g., presses, control equipment). If equipment changes, you must notify the Division in writing of the change(s). If your air permit allows, you may be able to submit a new equipment list in lieu of submitting a revised APEN and

Table 3

APEN AND PERMIT REPORTING LEVELS FOR ATTAINMENT AND NONATTAINMENT AREAS				
	APEN		PERMIT	
Pollutant Category	Attainment (tons per year)	Nonattainment (tons per year)	Attainment (tons per year)	Nonattainment (tons per year)
Volatile organic compounds	2	1	5	2
PM-10 and PM-2.5	2	1	5	1
Total suspended particulates	2	1	10	5
Carbon monoxide	2	1	10	5
Sulfur dioxide	2	1	10	5
Nitrogen oxides	2	1	10	5
Lead	100 pounds per year	100 pounds per year	200 pounds per year	200 pounds per year
Other criteria pollutants ¹	2	1	5	2
Non-Criteria Pollutant (HAPs and other reportable air pollutants)	De Minimis Level (Determined Using Procedures in Regulation 3, Appendix A)	De Minimis Level (Determined Using Procedures in Regulation 3, Appendix A)		

fee if the reportable air emissions have not changed from the last APEN submitted and air emissions are below current air permit limits. This condition must be specifically listed in your air permit. A new fully completed APEN form and the associated filing fee must be submitted to the Air Division at least 30 days before expiration of the five-year term on the current APEN. It is important to keep the APEN(s) for your facility up to date. If the APEN for your facility is more than five years old, your equipment has changed, your emissions have increased or your facility is operating under a new name or new ownership, it may be time to submit a new APEN (and modify your air permit if applicable), regardless of the five-year term.

The Air Division will use the information provided in the APEN to determine if an air permit is required. If an air permit is required, the APEN will become part of the air permit application package.

Certain categories of sources are exempt from APEN requirements because the emissions from those sources are considered to have very little impact on air quality. Exempt sources are listed in Regulation 3, Part A, II.D. This regulation is available online at www.cdphe.state.co.us/regoverview.html. If you are not certain whether you have emissions or equipment that is exempt from APEN or air permit requirements or have questions regarding your APEN or air permit, contact the Small Business Assistance Program.

Remember, your goal, as a “green business” is to eliminate the use of environmentally harmful products and move your company towards a more sustainable business environment. To do this, evaluate the products you use and determine if there are alternative products that could be used to reduce or eliminate VOCs, HAPs and other air pollutant emissions in your operations. Then determine if a change to alternative products is feasible for your business and can help you attain your Sustainable Management System (SMS) objectives and targets.

8.2 Non-Criteria Reportable Addendum form (HAP Reporting)

Reporting thresholds for hazardous air pollutants (HAPs) are determined using the procedures outlined in Regulation No. 3, Appendix A. These procedures allow you to determine your reporting levels based on the “scenario” that best fits your business operations. To determine which scenario to use for reporting, you must measure the distance (height) from the air pollutant release point to ground or the distance (length) from the release point to your property boundary. Once you have determined a distance, you choose the scenario that best fits from Regulation No. 3, Appendix A and report HAPs emitted from your facility if they exceed the reporting levels outlined for that scenario. Most facilities use Scenario 1 to determine reporting levels since it is the most conservative (e.g., release point is measured as less than 10 meters or distance to property boundary is less than 100 meters). The list of HAPs and the method for identifying HAP reporting levels is outlined in Colorado Regulation No. 3, Appendix A and B. These appendices are available online at www.cdphe.state.co.us/ap/regoverview.html and are included in Appendix D of this document. If your business has reportable HAPs, you must complete the form titled, “APEN Addendum for Non-Criteria Reportable Pollutants” and submit this form with the APEN form and APEN filing fee.

8.3 Air Permits

Air emissions at your facility may trigger the need for an air permit (called a “Construction Permit”) due to the level of air pollutants emitted. In Colorado, a Construction Permit is required before you begin construction of a new source or modification of an existing one if uncontrolled actual emissions from this source exceed any of the permit reporting levels outlined in Table 3 above.

Permit reporting thresholds are listed in Regulation No. 3, Part B, II.D.2 and 3. Some sources are exempt from obtaining permits similar to filing APENs. Permit exempt sources are listed in Regulation 3, Part B, II.D.1. A list of these exemptions is available online at www.cdphe.state.co.us/ap/regoverview.html. None of the exemptions apply if a source would otherwise be subject to any specific federal or state rule such as a National Emission Standard for Hazardous Air Pollutants (NESHAP) or New Source Performance Standard (NSPS). If you have questions about state or federal programs that may apply to

your facility or whether a source at your facility is exempt from obtaining an air permit, contact the Small Business Assistance Program.

In Colorado, air permits are issued in two phases:

- **Initial Approval and Final Approval**

An **Initial Approval** air permit allows your facility to be constructed and begin operation. Under most circumstances, if your business is already operating and you determine that you may need an air permit (for example, you have expanded your operations), you will also receive an Initial Approval permit after submitting the APEN. You should always review the Initial Approval permit conditions to make sure you can comply with them prior to final approval of your air permit.

A **Final Approval** permit is issued after your company certifies that you are in compliance with the conditions of the Initial Approval permit. The owner must submit the final approval self-certification form entitled, "Air Pollution Control Division Construction Permit Final Approval Self-Certification Form", to the Air Division within six months (180 days) of start up of operations or within six months of the date the Initial Approval permit is issued.

Your air permit sets air pollutant emission limits (such as VOC and HAP emission limits), defines the type of air pollution control measures that will be used at your facility, requires you to mark the air permit number on each piece of equipment subject to the air permit, includes recordkeeping requirements and may include additional requirements. Take the time to review your air permit and be familiar with your regulatory requirements. More information on the air permitting process can be found in the guidance document, *"Reporting Your Air Emissions and Applying for Air Permits Step-by-Step for Colorado Small Businesses."* This document is available online at www.cdphe.state.co.us/ap/down/permittingstepbystep.pdf.

8.4 Reasonably Available Control Technology (RACT)

Colorado Regulations No. 3 and No. 7 require new and modified sources in non-attainment areas to reduce air emissions using Reasonably Available Control Technology (RACT). The U.S. EPA defines RACT as the "lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility". In the Denver-Metropolitan/North Front Range ozone non-attainment area, all new and modified sources having emissions of VOC \geq 2 tons per year or nitrogen oxides (NO_x) \geq 5 tons per year are required to complete a RACT analysis. If your facility is a new or modified source of VOC or NO_x emissions in a non-attainment area, you are required to research and submit options available to your business to reduce VOC and NO_x emissions, and submit that RACT analysis with your air permit application. For example, RACT for printing or surface coating operations may include, but are not limited to, the use of low VOC inks, coatings and cleaners or add-on control equipment such as a thermal oxidizer or a carbon adsorber. The U.S. EPA provides insight on what RACT may be for certain types of operations in published Control Technique Guidelines or CTGs (Refer to Section 8.6 below). However, the final RACT determination is made on a case-by-case basis by the Air Pollution Control Division permit engineers who utilize the EPA's published CTGs as guidance. Note that RACT may be a change in work practice, use of a control device or no change in operations at all depending on the cost per ton of pollutant (e.g., VOC or NO_x) reduced. The Air Pollution Control Division will review the RACT analysis, make a determination on what RACT is for your operation and incorporate those requirement(s) into your air permit. The burden is on you to provide the RACT options that are feasible for your operations for APCD approval.

A RACT Analysis may include the following information:

1. Actual (uncontrolled) and Requested (considering growth) VOC and NO_x emissions (tons per year).
2. Types of controls such as the use of low VOC products, high transfer efficiency equipment such as HVLP or air-assisted airless spray guns or add-on control equipment such as carbon filtration or a thermal oxidizer or good work practices to minimize emissions of VOCs such as keeping containers lids closed when not in use.
3. Cost of controls – ranked on a cost per ton of VOC reduced basis.

8.5 Federal Requirements

In addition to state regulations, your business may be subject to federal standards called, “National Emission Standards for Hazardous Air Pollutants (NESHAPs) or New Source Performance Standards (NSPS). Information on NESHAPs that might apply to your business and “Implementation Tools” to help you understand the rules are available online at www.epa.gov/ttn/atw/area/arearules.html. Information on NSPSs is available online at <http://www.cdphe.state.co.us/ap/nsps.html>. Guidance on some of the NSPS that may apply to your business is available online at www.cdphe.state.co.us/ap/stationarylibrary.html. EPA has delegation over many of these rules until it is determined whether the State of Colorado will adopt and enforce them. Therefore, the federal rules not yet adopted by the state may not be included as a condition in your air permit, if applicable, at this time.

Small businesses may not be subject to some of these standards because emissions from these facilities are typically less than 10 tons per year of each regulated HAP or 25 tons per year of any combination of HAPs (major source thresholds). A good example of this is the National Emission Standards for Hazardous Air Pollutants for the Printing and Publishing Industry, Subpart KK. This regulation is available online at www.epa.gov/ttn/atw/print/printpg.html. If you have questions about NESHAPs, NSPS or other state or federal rules that may apply to your facility, contact the Small Business Assistance Program.

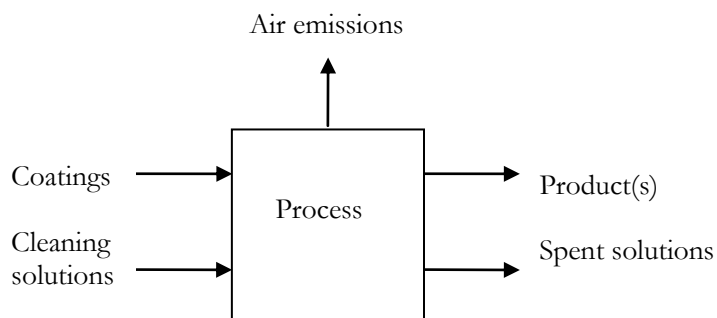
8.6 Control Technique Guidelines (CTG)

The U.S. EPA developed Control Technique Guidelines (CTG) to provide state and local air pollution control agencies information to assist them in determining RACT for VOCs from specific source categories. For example, In September 2006, the EPA issued two CTGs for the printing industry: 1) Control Technique Guidelines for Offset Lithographic Printing and Letterpress Printing and 2) Control Technique Guidelines for Flexible Package Printing. The CTG guidelines are available online at www.epa.gov/ttn/caaa/t1ctg.html. If you are a new or modified source in the Denver-Metropolitan/North Front Range ozone non-attainment area, the APCD may use information from the CTGs to determine your RACT requirements. These requirements will be listed in your air permit.

8.7 Calculating VOC Emissions

The simplest method to estimate VOC emissions from your facility is to utilize the **mass balance approach**. This method assumes that all of the volatiles in your inks, coatings, thinners, and cleaning solutions are emitted into the air. Essentially, what goes in must come out. Refer to Figure 2 below.

To determine actual emissions of VOCs requires some calculations. You must know how many pounds (lbs) of VOC are in a gallon of product and the total gallons of that product used during the previous year. The VOC content in the product should be available from your supplier in a Material Safety Data Sheet (MSDS) or Technical Data Sheet or by direct measurement using a sampling method such as the U.S. EPA Method 24.

Figure 2**Steps:**

1. On the MSDS, in the section called "Physical Properties," you will typically find the total amount of VOC contained in the product.
2. Select the value for VOCs that includes water and exempt solvents for use in your calculations. You'll want to use the VOC content "as emitted". This value may be listed in terms of "pounds of VOC per gallon," "grams of VOC per liter of liquid," or "VOC weight percentage of the total liquid."
3. If the VOC content is listed in pounds per gallon, multiply the pounds of VOC per gallon of product by the total number of gallons of product used. This gives you the total emissions of VOC from that product as follows:

$$\text{Pounds/gallon of VOC in the product} \times \text{gallons used/year} = \text{pounds of VOC emitted/year}$$

4. If the VOC content is listed in grams per liter (g/l), convert the VOC content in "grams per liter" into VOC content in "pounds per gallon" as follows:

$$\text{VOC content (lbs/gal)} = \text{VOC content (grams/liter)} \times 1 \text{ pound}/454 \text{ grams} \times 1 \text{ liter}/0.264 \text{ gal}$$

Then, multiply the VOC content (lb/gal) in the product by the total number of gallons of product used (same as Step 3 above). This gives you the total emissions of VOC from that product per year.

5. If the VOC content is listed as percent by weight (% wt) or percent by weight for each ingredient in the product, first determine the weight of one gallon of the product. The weight of the product may be listed under "Density" in pounds per gallon in the "Physical Properties" section of the MSDS. If this value is not provided, then calculate the weight of one gallon of the product by multiplying the "Specific Gravity" of the product by 8.34 pounds per gallon (the density of water) as follows:

$$\text{Weight of Product (lb/gal)} = \text{Specific Gravity} \times 8.34$$

6. If the ingredients are reported in ranges (e.g., 1-5%), use the upper range in the calculation (e.g., 5%). When estimating emissions, it is best to be conservative and the upper range represents the worst case. It is possible, using this approach to end up with a calculation showing that more than 100% of the product is VOC. If this occurs, use only 100%.

7. Next, divide the percent by weight (% by wt.) of VOC by 100 and then multiply this number by the weight of one gallon of the product (density) and by the number of gallons of product used per year. Total VOC emissions from this product are calculated as follows:

$$\text{VOC}_1 \text{ (lb/gal) in product} = (\% \text{ by weight of VOC}_1 / 100) \times (\text{density of VOC}_1 \text{ [pounds/gallon]})$$

8. Calculate the pounds of Total VOC in a gallon of product as follows:

$$\text{Total pounds VOC/gallon of product} = (\text{VOC}_1 \text{ lbs/gal} + \text{VOC}_2 \text{ lbs/gal} + \text{VOC}_3 \text{ lbs/gal} + \dots)$$

9. For inks and other coatings, calculate the VOC emissions for individual inks used or use the highest VOC containing ink in each product category. This can save a lot of time and effort since typically the only difference between many inks and coatings is the pigment. Use good judgment and only group products that are similar in type and VOC content.
10. In addition, VOC release factors may be used to further reduce VOC emissions. An example of VOC release factors is listed in Table 4 below for Offset Lithography and Letterpress printing facilities (from the final U.S. EPA Control Technology Guideline (CTG) for Offset Lithographic and Letterpress Printing, September 2006).

$$\text{Total pounds VOC/gal of ink or cleaning solution} \times \text{release factor} = \text{lbs of VOC (without considering add-on controls)}$$

11. To convert to tons per year, divide the pounds of VOCs by 2,000 (1 ton = 2000 pounds) to yield actual uncontrolled VOC emissions in tons per year. Keep uncontrolled emissions (no control device) separate from controlled emissions. Refer to the example in Table 5.
12. If your facility has emission control equipment (e.g., thermal oxidizer), the actual uncontrolled emissions can be multiplied by a control factor to determine controlled facility or source air emissions. You can calculate this control factor by subtracting the percent control efficiency (decimal format) from 1. If the control efficiency is not available on the equipment or in the equipment's operating manual, contact the equipment manufacturer or supplier for this information. Multiply total uncontrolled actual VOC emissions by the control factor as follows:

$$\text{Controlled VOC emissions (lb)} = \text{Total uncontrolled VOC emissions} \times (1 - \text{control efficiency})$$

Table 4
Example of Release Factors - Printing Industry

Product Category	VOC Release Factor	Comments
Heatset Inks	.80	20% Retention
Sheetfed/Nonheatset web inks	.05	95% Retention
Cleaning Solution	.50	Vapor pressure less than 10 mm of mercury (Hg) at 68°F (20°C), shop towels must be kept in closed containers.

13. Total VOC emissions are the result of adding all of the individual VOC emission calculations together and determining if your business must file an Air Pollutant Emission Notice, obtain an air permit or demonstrate that your facility is in compliance with a current air permit. Refer to the VOC Emission Calculation Worksheet - Example (Table 5).

Table 5
VOC Emission Calculation Worksheet - Example

Product	Usage	Units	VOC Content	Units	Release Factor	VOC Emissions (Uncontrolled)	Control Efficiency	VOC Emissions (Controlled)
Non H/S Ink	25,000	lb/year	0.35	% By Weight	0.05	437.5		0.0
Fountain Solution	420	gal/year	0.72	Lb/gal	1.0	302.4		0.0
FS Additive	120	gal/year	6.7	Lb/gal	1.0	804.0		0.0
Cleaning Solution	1200	gal/year	6.24	Lb/gal	0.5	3,744.0		0.0
Total						5,287.9		
H/S Ink	20,000	lb/year	0.40	% By Weight	.80	6,400.0	.10 (1-.90) with oxidizer	640.0 lb/year
TOTALS								
Total Uncontrolled	5,287.9 lb/year + 6,400.00 lb/year = 11,687.9 divided by 2000 lb/ton = Uncontrolled Actual air emissions in tons per year.							5.84 tons/year
Total Controlled	640 pounds/year from H/S Ink divided by 2000 pounds/ton = Controlled Actual air emissions in tons per year.							0.32 tons/year

In Table 5, uncontrolled emissions are calculated using nonheatset inks (non H/S), cleaning solutions, and heatset inks before consideration of controls. Controlled emissions are calculated from heatset inks (H/S) using a press with a thermal oxidizer as the control device.

In this example, based on actual uncontrolled VOC emissions of 5.84 tons per year, this facility, if located in an ozone non-attainment area, would need to file an Air Pollutant Emission Notice (APEN) and obtain an air permit since VOC emissions exceed the two ton per year permit threshold in Regulation No. 3, Part B (refer to Table 3).

8.8 Calculating Hazardous Air Pollutant (HAP) Emissions

The method for calculating HAP emissions is similar to that used to calculate VOC emissions in the previous section. It is important to note that HAP quantities in pounds per gallon (lb/gal.) are rarely provided on Material Safety Data Sheets (MSDS). Typically, the MSDS lists individual HAPs and the percent by weight or volume of each. Your facility may not have reportable HAPs but you should document that you have made this determination, and if necessary, file the appropriate paperwork to report them. A guidance document titled, "A Simple Guide to Calculating and Reporting Air Emissions for VOCs and HAPs" is available to help you calculate VOC and HAP emissions. This guidance document is available online at www.cdphe.state.co.us/ap/sbap/Guide-VOCCalcs%203-08.pdf or by contacting the Small Business Assistance Program.

8.9 Boilers

As a general rule of thumb, a small business that has a boiler with a heat input capacity *greater than* 10 million British Thermal Units per hour (MMBtu/hr) is typically required to file an APEN with the APCD and obtain an air permit. A facility with a boiler that has a heat input capacity *less than* or equal to 10 MMBtu/hr will typically be required to file an APEN only when the fuel throughputs in Table 6 are exceeded. Note: fuel throughputs listed in Table 6 are dependent upon whether the facility is located in an ozone attainment/maintenance or non-attainment area.

Table 6

Fuel Type	Attainment/Maintenance Area	Nonattainment Area
APEN Reporting Threshold	2 tons per year	1 ton per year
Liquid Petroleum Gas (gallons per year)	95,238	190,476
Natural Gas (million standard cubic feet, mmscf/yr)	20	40
Fuel Oil No. 4, 5, 6 (residual) and distillate (No. 1 and 2) (gallons/yr)	36,364	72,727

¹Fuel estimates are based on emission factors from EPA's AP-42, "Compilation of Air Pollution Emission Factors".

Use the General APEN form to report information about your boiler, including design heat input rate, types of fuel burned, fuel consumption rates, fuel heating values, and any control equipment. The General APEN form is available through the APCD and may be downloaded at: <http://www.cdphe.state.co.us/ap/downloadforms.html>. A single APEN may be used to list multiple identical boilers.

Colorado air regulations include two reporting exemptions for small boilers:

1. Boilers that use only gaseous fuel with a maximum heat input capacity of less than or equal to five (5) MMBtu/hr are exempt from APEN requirements, unless the unit is a part of a process (Regulation No. 3, Part A, Section II.D.1.k) and;
2. Boilers that use only gaseous fuel, with a maximum heat input capacity of less than or equal to ten (10) MMBtu/hr, that are used solely for heating buildings for personal comfort are exempt from APEN requirements (Regulation No. 3, Part A, Section II.D.1.ggg).

Boilers that meet the following criteria are subject to the federal **New Source Performance Standard (NSPS) Dc**:

- The unit has a maximum design heat input capacity input greater than or equal to 10 MMBtu/hr but less than or equal to 100 MMBtu/hour and;
- The unit was constructed, modified, or reconstructed after June 9, 1989.

The NSPS for small boilers is found in *Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (Dc Boilers), Code of Federal Regulations (CFR), Title 40, Part 60, Section 60.40c to 60.48c*.

Operators of Subpart Dc boilers are subject to recordkeeping and reporting requirements. The NSPS is available for download at <http://ecfr.gpoaccess.gov>. A NSPS Subpart Dc guidance document is available online at www.cdphe.state.co.us/ap/sbap/sbap_boilers.pdf.

8.10 Emergency Generators

Emergency power generators that were previously exempted from air permitting requirements may now have to be permitted. Emergency power generators that were constructed, reconstructed or modified (including those new to Colorado) after July 11, 2005 may have to be permitted under a federal New Source Performance Standard (NSPS) IIII. This NSPS is found in 40 CFR Part 60 Subpart IIII. If your facility has or will purchase an emergency generator, the unit may have to be certified to meet the required Non-road Engine Tier standards and your facility will have to comply with specific emission

standards for operating the generator. If you have any questions about these requirements, contact the Small Business Assistance Program.

Who is subject to Subpart IIII?

- Owners or operators of stationary compression ignition internal combustion engines that commence construction, reconstruction, or modification (as defined at 40 CFR 60.14) after July 11, 2005 or stationary compression ignition internal combustion engines (ICE) that are new to Colorado after July 11, 2005.
- Manufacturers of 2007 and later model year compression ignition ICE.

Older engines being brought into Colorado that have not been previously permitted in Colorado will be considered “new” and will have to comply with the prevailing tier standards.

A specialty APEN is available for generators. If the generator is portable or does not meet the applicability requirements listed above then it may be exempt from permitting. A NSPS IIII guidance document is available online at www.cdphe.state.co.us/ap/sbap/SBAPNSPSIIII.pdf.

8.11 Control Equipment

You should submit information regarding add-on control equipment utilized at your facility with your APEN, if applicable. This information is used to calculate controlled air emissions from sources that you are reporting. If you plan to add or modify control equipment, you should submit an APEN for the modification(s) in control equipment prior to the change. Submit specifications for the control equipment with the APEN to include items such as: make, model, and serial number, type of equipment, type of fuel and quantity used annually (if applicable) and the control efficiency. Recordkeeping and reporting requirements, if any, for the control equipment will be included in your air permit, if applicable.

8.12 Recordkeeping Requirements

Your facility may be required to maintain air emission records for VOCs, HAPs, and/or other air pollutants as specified in your air permit. These records must be available to the APCD for inspection upon request. Your facility should maintain a copy of the most recent APEN, fee (check or cancelled check), air permit, air emissions calculations, and other documents as required by your air permit. The air permit number must be permanently affixed on each piece of permitted equipment for ease of identification.



8.13 Air Emission and Permitting Fees

APEN fees, Annual Fees and Air Permitting fees are subject to change on an annual basis. Refer to www.cdphe.state.co.us/ap/billing.html for the most current information.



8.14 Top Ten Air Pollutant Violations

Top Ten Air Pollutant Violations for Printers	
<input type="checkbox"/>	Failure to notify the Division of air emissions and file an Air Pollutant Emission Notice (APEN).
<input type="checkbox"/>	Failure to comply with air permit limits e.g., exceedance of throughputs or VOC limits.
<input type="checkbox"/>	Failure to maintain appropriate records to demonstrate compliance with an APEN or air permit limit e.g., VOC and HAP emissions records, rolling 12-month totals.
<input type="checkbox"/>	Improper disposal of VOCs by evaporation or spillage.
<input type="checkbox"/>	Failure to file an APEN update within the 5-year renewal period.
<input type="checkbox"/>	Failure to notify the Division of a change in equipment or process.
<input type="checkbox"/>	Failure to notify the Division of a name change or transfer of ownership.
<input type="checkbox"/>	Failure to install control equipment.
<input type="checkbox"/>	Failure to use required control equipment.
<input type="checkbox"/>	Failure to properly maintain control equipment, including documentation of appropriate operating parameters and maintenance.



9.0 Wastewater Requirements

9.1 Discharges to the Sanitary Sewer

Your business is not allowed to discharge industrial waste (non-domestic wastewater) to the sanitary sewer system without notifying the local sanitation district or publicly owned treatment works (POTW). A list of POTWs is available online at www.cdphe.state.co.us/wq/PermitsUnit/pretreat/POTWcompletelisting.pdf. Be prepared to provide information to the sanitation district regarding the proposed wastewater discharge. The following information may be requested:

1. A description of the substances proposed for discharge;
2. A description of the process generating the waste;
3. The quantity of waste to be discharged e.g., gallons per day or gallons per month;
4. The frequency of discharge e.g., one-time, continuous;
5. A description of any treatment prior to discharge e.g., neutralization;
6. Analytical data on the proposed discharge;
7. Material Safety Data Sheet(s) on the substances proposed for discharge.

In addition to your sanitation district's requirements, there are specific state prohibitions for all industrial dischargers.

Your business is Not allowed to:

- Discharge or transport silver-bearing wastewater to a sewer treatment plant in excess of the limitations provided by the POTW.
- Discharge wastewater with a pH lower than 5.0. Facilities should consult with their POTW to determine if their discharge is regulated by any upper pH limitation. Facilities discharging wastewater with a pH of greater than or equal to 12.5, must report these discharges to their local POTW, the Colorado Department of Public Health and Environment (CDPHE), and Region VIII EPA in accordance with the requirements set forth at 40 CFR 403.12.
- Discharge hazardous wastes to a sewer treatment plant without notification to the local POTW, CDPHE, Region VIII EPA, and approval of the local POTW.
- Discharge petroleum oil, non-biodegradable cutting oil or products of mineral oil origin in amounts that will interfere with local sewer treatment plant operations.
- Discharge wastewater to a sewage treatment plant any material that may cause a fire hazard or interfere with the local sewage treatment plant operations (e.g., solvents, solids, viscous materials, oxygen demanding pollutants, heated process waters, etc.).

Contact your local sewer authority or the Water Quality Control Division for guidance. Information is available online at www.cdphe.state.co.us/wq/PermitsUnit/.

9.2 Discharges to a Septic System

Facilities that have a private septic system must not discharge any industrial wastewater into that septic system. Only domestic wastewater (bathrooms, kitchens, etc.) may be discharged to a septic system.

9.3 Other Discharges

Your business must not discharge any industrial wastewater to the ground or surface water (storm drain, stream, lake or pond) without permission to discharge from the Water Quality Control Division at the Colorado Department of Public Health and Environment.

9.4 Top Ten Non-domestic Wastewater Violations

Top Ten Non-domestic Wastewater Violations For Printers	
<input type="checkbox"/>	Failure to comply with specific effluent limitations.
<input type="checkbox"/>	Failure to self-monitor at the frequency or in the manner prescribed by the POTW.
<input type="checkbox"/>	Failure to maintain records of self-monitoring and waste disposal activities for a minimum of three years.
<input type="checkbox"/>	Failure to maintain records of all calibration and maintenance activities for all equipment used to fulfill self-monitoring requirements.
<input type="checkbox"/>	Failure to update plans (e.g., spill, toxic organic, engineering calculations, etc.) as required.
<input type="checkbox"/>	Failure to provide period compliance, non-compliance, accidental discharge, and other reports within the prescribed time frame.
<input type="checkbox"/>	Failure to accurately report non-compliance.
<input type="checkbox"/>	Failure to provide information as requested by the POTW.
<input type="checkbox"/>	Failure to notify of process waste batch discharges.
<input type="checkbox"/>	Failure to notify of a discharge of hazardous waste.

10.0 Stormwater Requirements



The Water Quality Control Division also regulates stormwater runoff that has been in contact with industrial storage materials, wastes and other potential sources of contamination. Stormwater regulations are designed to prevent chemicals and wastes from contaminating surface and groundwater. Printing and Imaging facilities that fall under Standard Industrial Classification (SIC) major Group 26 – Paper and Allied Products or Group 27 – Printing, Publishing and Allied Products or Metal fabricators/surface coating facilities under Group 34-Fabricated Metal Products are examples of industries included in the list of industrial activities that require a stormwater permit if industrial activities are exposed to stormwater. A complete list of regulated industrial activities is available online at <http://www.cdphe.state.co.us/wq/PermitsUnit/FORMSandApplications/APPLICATIONS/SWapplications/SWHLIndustryApplication.pdf>. If your company keeps potential sources of contamination under cover or protected from stormwater (rain and snow), you may qualify for a “No Exposure Certification”.

10.1 No Exposure Certification

If **all** industrial activity, materials handling and storage at your facility is protected from precipitation, you may not need to obtain a permit. Instead, you may be able to complete a “*Stormwater No Exposure Certification for Exclusion from CDPS Stormwater Permitting*”. A copy of the No Exposure Certification and a checklist to help you determine if your facility meets the no exposure exclusion requirements is available online at www.cdphe.state.co.us/wq/PermitsUnit/FORMSandApplications/APPLICATIONS/SWapplications/NoExposure.PDF. If any industrial activities or materials are or will be exposed to precipitation, your facility is not eligible for the No Exposure exclusion.

There is no fee associated with submittal of the No Exposure Certification form. However, if you are currently under a stormwater discharge permit, any invoices already received for permit coverage must still be paid.

10.2 Stormwater Permitting

If your facility is not eligible for the “No Exposure” exclusion, you will be required to obtain a stormwater permit. If your business is not eligible for this exclusion, you must complete the “General Permit Application for Stormwater Discharges Associated with Heavy and Light Industrial Activity” or another applicable stormwater permit application form. The permit application forms are available online at www.cdphe.state.co.us/wq/PermitsUnit/FORMSandApplications/Appsandformsnewpage.html.

The permit requires you to control and eliminate the sources of pollutants from your facility that may come into contact with stormwater through development and implementation of a Stormwater Management Plan (SWMP). The purpose of the SWMP is to identify possible pollutant sources to stormwater and to apply Best Management Practices (BMPs) that, when implemented, will reduce or eliminate any possible water quality impacts. SWMP guidance is available on the General Permit Application form listed above. Completion of a SWMP is required prior to application. Full implementation of the SWMP is required at the start of facility operations or when the permit certification becomes effective, whichever is later.

Examples of Stormwater Best Management Practices (list is not all inclusive)

- Keep all chemical activities and storage contained within your building or within a protected shelter.
- Caution must be exercised around loading docks and parking lots where materials are moved between vehicles and your facility. If your loading dock is covered, chemicals or other materials brought into the facility via the loading dock will not be exposed to stormwater.

- Use lids or cover dumpsters, compactors, or other containers outside.
- Materials stored in drums, barrels, and tanks intended for outdoor storage must be tightly sealed and kept in good condition (do not leak).
- Place chemical containers on an impervious surface and provide with secondary containment to prevent leakage or overflow from that area.
- The addition of material to or withdrawing of material from these containers while outside is deemed exposure.
- Perform maintenance activities on fleet vehicles or material handling equipment inside of a building.
- Clean up spills immediately. Basic precautions are fundamental to reducing the risk of spills and potential exposure to stormwater. Spill control and clean up supplies should be available near chemical storage and material handling areas.
- All personnel involved in industrial activities that may impact stormwater runoff should be trained on your facility's SWMP.
- Review your stormwater management plan and practices and reduce the potential for stormwater exposure.

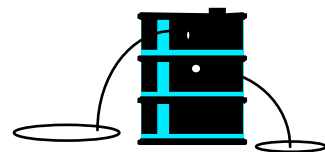
Fees

Annual fee: Refer to "Program Fees" on the Water Quality Permitting Website at www.cdphe.state.co.us/wq/PermitsUnit/index.html for current fee information.

10.3 Top Ten Industrial Stormwater Violations

	Top Ten Industrial Stormwater Violations For Printers
<input type="checkbox"/>	Failure to obtain a permit or no exposure certification.
<input type="checkbox"/>	Failure to implement a Stormwater Management Plan (SWMP).
<input type="checkbox"/>	Failure to maintain a Stormwater Management Plan.
<input type="checkbox"/>	Failure to perform basic good housekeeping to clean up spills and materials that could pollute stormwater.
<input type="checkbox"/>	Storage of materials exposed to stormwater without adequate controls to prevent the discharge of pollutants.
<input type="checkbox"/>	Failure to perform and document inspections at least twice a year.
<input type="checkbox"/>	Leaks from vehicles or equipment that are not managed to prevent stormwater pollution.
<input type="checkbox"/>	Failure to train staff, including temporary staff or contractors, on necessary practices to prevent stormwater pollution.
<input type="checkbox"/>	Failure to submit an Annual Report on permit compliance.
<input type="checkbox"/>	Failure to manage waste disposal areas, such as dumpsters, to control stormwater pollution.

11.0 Spills and Reporting



11.1 Spill Release Reporting

When a chemical spill or release occurs at a facility in Colorado, there are a number of reporting and notification requirements that must be followed by an authorized person at the facility where the spill or release occurred. The Superfund Amendments and Reauthorization Act (SARA) Title III, a federal law with which facilities must comply in Colorado, requires release reporting. Your business must immediately report any release that exceeds the reportable quantity (RQ) for a specific chemical to the agencies listed below. Reporting is mandatory for any chemical on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) list or on the Extremely Hazardous Substance (EHS) list (EPCRA Section 302) and you must report within 15 minutes of the release.

Releases of Extremely Hazardous Substances that equal or exceed the Reportable Quantity (Section 304 EHS RQ) are subject to state and local reporting. Releases of CERCLA Hazardous Substances that equal or exceed the RQ are subject to reporting to the National Response Center (NRC) and also to the state and local agencies listed below. A list of chemicals and their reportable quantities is available online at www.epa.gov/emergencies/tools.htm#lol. This list is referred to as the SARA Title III List of Lists (LOL). The List of Lists provides RQs in pounds or curies. If your release is in another unit, such as gallons, you must calculate the release into pounds.

In addition to telephone notification, the responsible party must send written notification describing the release and associated emergency response to both the Colorado Emergency Planning Commission (CEPC) and your Local Emergency Planning Commission (LEPC) as soon as practicable after the release (no later than 2 weeks). An online release and reporting form is available online at www.cdphe.state.co.us/hm/spillsandreleases.htm. Plan ahead and be prepared before an accident happens. Be ready to respond and report if necessary.

1. National Response Center (NRC)
1(800) 424-8802 (24-hour)
2. Colorado Department of Public Health (CDPHE is the CEPC)
1(877) 518-5608 (24-hour)
3. Local Emergency Planning Committee (LEPC)
A list of LEPC is available online at www.cdphe.state.co.us/oeis/sara/lepclist.html
4. Transportation incidents should be reported to 911.



Information on spill release reporting is available online at www.cdphe.state.co.us/hm/spillsandreleases.htm.

11.2 Spill Response

If you have a spill at your facility, the following actions are recommended:

- Have a plan for spill response before an accident happens.
- Train employees on spill response procedures.
- Evacuate the immediate area of personnel.
- Shut down or disconnect equipment that may cause a spark or fire.

- Secure the area with tape or barricades.
- Identify the hazardous materials without being exposed to the material.
- Utilize trained personnel with appropriate personnel protective equipment (gloves, respirator, chemical suit, etc.) to contain and clean up the spill.
- Make sure that you have the Material Safety Data Sheet for all of your products available (and employees know where the MSDS book is kept) in case of an emergency.
- If the spill response exceeds in-house capabilities, contact the fire department or a private emergency response contractor.
- Try to segregate reusable and waste materials. Place waste into approved Department of Transportation (DOT) containers and label the container with the contents.
- Document the cleanup effort.
- If soil or water contamination is noted, determine the quantity of material lost and contact the Colorado Department of Public Health and Environment and other agencies as required.
- Ensure proper federal, state, and local government agencies are notified in accordance with the spill reporting requirements in this section.

The Occupational Safety and Health Administration (OSHA) requires that a spill of hazardous materials be controlled and cleaned up promptly. Under OSHA requirements (29 CFR 1910.120), employees responding to hazardous material spills that require personnel beyond those in the immediate area must receive specific training in the emergency procedures and equipment that applies to the response tasks. Refer to the OSHA website for more information at www.osha.gov.

12.0 Emergency Planning and Community Right-to-Know Requirements



The Emergency Planning and Community Right-to-Know Act (EPCRA) requires reporting and notification for certain hazardous chemicals. Under EPCRA, businesses are required to report chemical inventories for those chemicals stored in excess of threshold planning quantities (TPQ) and notify authorities in the event of a toxic release. EPCRA was developed to ensure that states and communities have information from businesses like yours in which to develop chemical emergency plans and to provide public access to information about the use and storage of chemicals in their communities.

12.1 Emergency Response Planning (EPCRA Sections 301-303)

A facility that possesses any Extremely Hazardous Substances (EHS) at or above the TPQ is obligated to follow emergency planning requirements and must notify the Colorado Emergency Planning Commission (CEPC), the Local Emergency Planning Commission (LEPC) and the fire department. TPQs are listed by chemical name on the list of EHSs. Under this section, your business must designate an emergency coordinator to participate in the emergency planning process and provide any information requested by the LEPC to facilitate emergency planning. A list of LEPCs (listed by county) is available online at www.cdphe.state.co.us/oeis/sara/lepclist.html. The Colorado Department of Public Health and Environment represents the

How Do You Calculate the Quantity of Extremely Hazardous Substances (EHS)?

The quantity calculation includes the total amount of EHS present at a facility at any one time, regardless of location, number of containers, or storage method. Mixtures containing EHS are included and the regulations detail how to calculate them. A list of Extremely Hazardous Substances is available online at www.cdphe.state.co.us/oeis/sara/index.html

CEPC. A search engine is available at <http://dfs.state.co.us/FireDeptInfo.htm> to locate your local fire department. The fire department is typically a member of the LEPC.

12.2 Emergency Notification (EPCRA Section 304)

Your facility must notify the CEPC and LEPC if there is a release into the environment of a hazardous substance that exceeds the Reportable Quantity (RQ). This requirement covers Extremely Hazardous Substances (EHS) regulated under EPCRA and CERCLA hazardous substances (refer to Definitions in Appendix A). Initial notification can be made by telephone, radio or in person, with written follow-up submitted to the CEPC and LEPC as soon as practicable after the release. Since emergency notification applies to CERCLA hazardous substances as well as those listed in EPCRA, your business could be subject to emergency notification in the event of a release, even though you may not be required to follow any other provision of EPCRA.

12.3 Community Right-to-Know (EPCRA Sections 311 and 312)

Community Right-to-Know Requirements apply to a facility that has at any one time:

- Any EHS in a quantity greater than 500 pounds or the Threshold Planning Quantity (TPQ), whichever is less; or
- Any other hazardous chemical as defined by OSHA in a quantity of 10,000 pounds or more.

For those hazardous chemicals and EHS above these threshold amounts, your business must submit a list of the chemicals and their associated hazards to the CEPC, the LEPC and the local fire department. You must also annually submit a hazardous chemical inventory report to the CEPC, LEPC and the local fire department for those hazardous chemicals and EHS that exceeded thresholds at any one time during the preceding year. The State of Colorado requires you to submit the **TIER II** report as the annual reporting form. A copy of the TIER II forms and guidance is available online at www.cdphe.state.co.us/oeis/sara/index.html. You should contact your LEPC and the fire department to determine if they require additional reporting.

12.4 Toxic Release Inventory (TRI) (EPCRA Section 313)

Facilities with ten or more full-time employees that **Process or Otherwise Use** a listed toxic chemical above threshold quantities are required to complete a **Toxic Chemical Release Inventory (TRI)** form and submit it annually to EPA and the State by July 1 of every year. This report accounts for all losses of a chemical through business activities including air emissions, hazardous wastes, water discharges and accidental spills and releases. Reporting levels are generally 25,000 pounds processed in a reporting year or 10,000 pounds otherwise used. There are lower thresholds for chemicals of special concern which are persistent, tend to bioaccumulate or are highly toxic. If a chemical becomes part of the final product such as a pigment, it is classified as "Processed". If the chemical does not become part of the final product such as a cleaning solvent or fountain solution additive, it is classified as "Otherwise Used".

Many small businesses are not required to report under TRI because they do not use enough chemicals on the list to trigger reporting. However, to confirm this, you should prepare a list of the products that are used in your facility in the greatest quantity (e.g., coatings, adhesives, cleaning solvents) and unless 10,000 pounds of any of these products were used, then reporting is not necessary. If more than 10,000 pounds was used, then the ingredients in those products should be compared to the Section 313 list to see if any chemicals in them appear on the list. If so, a calculation of individual usage should be performed. It is important to also look at the Persistent Bioaccumulative and Toxic (PBT) chemicals as they have very low reporting thresholds. TRI forms and instructions are available online at www.cdphe.state.co.us/oeis/sara/index.html or by calling the EPCRA Hotline at 1(800) 424-9346.

12.5 EPCRA Fees

Facilities required to report under the Federal Emergency Planning and Community Right-to-Know Act, SARA Title III, Sections 302/311/312 (typically Tier II) and/or 313 (TRI), are subject to Pollution Prevention fees under the authorization of the Colorado Pollution Prevention Act. You should not submit payment with Tier II or TRI reports. You will be billed based on your reporting information. Information on EPCRA fees is available online at www.cdphe.state.co.us/oeis/sara/p2fee.html.

12.6 Top Ten EPCRA Violations

Violations - EPCRA Section 311/312 And 313 and Spill Reporting	
<input type="checkbox"/>	Failure to report TIER II (Section 311/312) chemicals.
<input type="checkbox"/>	Failure to report TRI (Section 313) chemicals.
<input type="checkbox"/>	Failure to accurately report TIER II or TRI chemicals (leads to underreporting or facility reports lower local thresholds on the federal reports).
<input type="checkbox"/>	Failure to report fuels or refrigerants under TIER II and TRI (facilities don't think of fuels or refrigerants as hazardous chemicals).
<input type="checkbox"/>	Failure to report Sulfuric acid from lead acid batteries under Section 312/312 (TIER II).
<input type="checkbox"/>	Failure to report the lead under Section 313 (TRI) e.g., welding operations.
<input type="checkbox"/>	Failure to report listed metals under Section 313 (TRI) e.g., alloys.
<input type="checkbox"/>	Failure to report Nitric acid under Section 313 (TRI) e.g., facility neutralizes the Nitric acid to discharge as wastewater, neutralization forms Nitrate compounds that are reportable under Section 313.
<input type="checkbox"/>	Failure to report spill releases under Section 302/304 of EPCRA.
<input type="checkbox"/>	Failure to report spill releases in a timely manner (within 15 minutes of the release by telephone and written notification no later than 2 weeks after the release).

13.0 Occupational Health and Safety (OSHA)



This section does not contain all relevant safety and health compliance issues but provides a brief overview of some of the health and safety issues that should be addressed at a typical small business (e.g., printing, surface coating, autobody, small manufacturing company), including the top ten OSHA violations. Refer to the resource guide in Appendix F at the end of the workbook for contacts and information on OSHA compliance.

Section 5(a)(1) of the OSH Act, often referred to as the General Duty Clause, requires employers to "furnish to each of its employees employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to its employees".

Section 5(a) (2) requires employers to "comply with occupational safety and health standards promulgated under this Act".

Workplace health and safety is an important management responsibility in your facility. To ensure the safety and health of workers in your business, management must establish a focus on safety that includes elements such as:

- management leadership and commitment
- employee engagement
- accountability
- safety programs, procedures, and practices
- safety goals and objectives
- safety inspections for workplace hazards
- safety program audits
- safety tracking & metrics
- hazard identification and control
- safety committees to promote employee involvement
- safety education and training
- safety communications to maintain a high level of awareness on safety

13.1 Hazard Communication

The Occupational Safety and Health Administration (OSHA) established Hazard Communication regulations that require employers to inform employees of the potential chemical hazards in the workplace.



In Colorado, the Right-to-Know law requires that employers:

- **NOTIFY** employees of their rights to information, including possible health effects and hazards, concerning all toxic substances present in their workplace.
- **PROVIDE INFORMATION** in response to employee requests with specific information in written form concerning any toxic substance present in the workplace.
- **TRAIN** employees in the identity, properties and safe use of toxic substances they can expect to encounter in the course of their work. Refresher training should be held annually.
- **KEEP RECORDS** of employee exposures.

Hazard Communication or Right-to-Know training (29 CFR 1910.1200) has five basic compliance requirements addressing chemical hazards in the workplace. The requirements are:

- Preparation and maintenance of an inventory of all hazardous chemicals and products found in the workplace. This inventory needs to be written and employers may choose whether to compile the chemical list for the workplace as a whole or for individual work areas.
- Prepare a written program that must describe how the labels and other forms of warning, the material safety data sheets (MSDS), and the employee information and training requirements of the standard will be met. It must describe who will be responsible for the in-plant labeling system used, employee training, and procedures and person(s) responsible for obtaining, maintaining and updating the MSDSs.

Additionally, the written program must outline the methods that will be used to inform outside contractors, employees of the hazards of non-routine tasks (e.g., cleaning reactor vessels) and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

- Implementation of an employee training program. Training is required for all new employees when new hazards are introduced to the workplace, or if an employee transfers to a new position and is exposed to hazards that were not previously trained. It is recommended that facilities hold annual training. The training program must be written and include:
 - A description of the hazard communication standard,
 - Physical and health hazards associated with the chemicals used in the work area,
 - Routes of entry/exposure of each hazard,
 - Procedures for safe chemical handling, including use of personal protective equipment, work practices and emergency procedures, and
 - Location of MSDS documents and how they are obtained and used.
- Implementation of a chemical container labeling program. All original and secondary containers must be clearly labeled with the chemical trade name, hazard identification (flammable, irritant, etc.) and the target organ(s) affected by the chemical.

Material Safety Data Sheets (MSDS)

MSDS documents are supplied by the chemical supplier or manufacturer to provide users with information related to safe use, storage and handling of the product. They are your primary source of information about the chemicals used in the workplace.

You must have an MSDS on file for each chemical that is, or has been, used at your facility, prior to initial use of that chemical. MSDS documents must be located in the area where the chemical product is being used. All MSDSs must be made available to all applicable employees.

When an MSDS is revised, the most recent version of the MSDS typically replaces the older version in the file or binder. However, all previous MSDSs for chemicals that are no longer used at the facility must be retained for a minimum of 30 years. There are many acceptable methods for indexing and filing MSDS documents. What is important is that employees can readily access the correct MSDS for information when it is

TIP:

If you store MSDS documents online, you may want to keep a hardcopy handy in case of an emergency.

In the event of a fire or chemical release, fire fighters and rescue personnel may need this information.

needed. Businesses often categorize MSDS documents by the process or department where the chemical is used. The arrangement of information on the MSDS may vary between manufacturers; however, all MSDS documents must contain (8) basic sections:

- Product name, manufacturer's name and address, telephone numbers for use in emergencies or to obtain additional information and the date the MSDS was prepared or last updated;
- Hazardous ingredients and properties, including the common name and trade name;
- Chemical exposure limits, if established, must be included:
- PEL (Permissible Exposure Level) is the level established by OSHA.
- TLV (Threshold Limit Value) is a guideline established by the American Conference of Governmental Industrial Hygienists (ACGIH).
- Physical and chemical characteristics, such as boiling point, vapor pressure, solubility, appearance and odor. The Volatile Organic Compound (VOC) content of the product is typically found in this section;
- Fire and explosion hazard data, including the flash point, flammable limits, extinguishing media and any special fire fighting procedures;
- Conditions to avoid, such as reactivity or incompatibility with other materials;
- Acute and chronic health hazards, routes of entry into the body, target organs, carcinogenic properties, signs and symptoms of exposure and emergency first aid. This section is also where any OSHA regulations for this chemical will be noted;
- Precautions for safe handling and use, such as storage and waste disposal;
- Control measures to protect employees from exposure. These may include personal protective equipment (PPE) recommendations such as gloves or respirator use, or other controls such as ventilation or work practices.

13.2 Chemical Hazards in the Workplace

Chemicals in the workplace may present a physical hazard, such as flammability, or a health hazard such as an irritation or a chemical burn.

Chemicals can be found in different forms in the workplace:

- Solids (particulates) such as dust or fumes
- Liquids such as coatings or solvents
- Gases and vapors such as natural gas or propane and chemical vapors

Chemicals enter the body through 3 major routes: inhalation, absorption or ingestion. Refer to Table 8 below for information on routes of entry, types of hazards and prevention measures.

Table 8

Route	Description	Prevention
Nose or mouth	Airborne contaminants (e.g., dust, fumes or vapors) can be inhaled directly into the lungs through the nose or mouth.	Standard or localized ventilation and, in rare instances, respirators or masks. The use of respirators requires a full compliance program.
Eye	Liquids, particulates, gases and vapors can have direct contact with the eyes.	Personal protective equipment such as safety glasses, goggles, full face masks
Skin	Chemicals, particularly certain solvents can be absorbed through the skin.	Gloves, protective aprons, good hygiene practices such as washing hands before breaks and lunch.
Ingestion	Chemicals and particulates can be inhaled and swallowed, or contaminated objects (such as cigarettes) placed in the mouth.	Dust masks, good hygiene practices. Do not allow smoking or food to be stored or consumed in work areas where harmful chemicals are used.

13.3 Personal Protective Equipment



Protective equipment, including personal protective equipment (PPE) for eyes, face, head, and extremities, protective clothing and respiratory devices must be provided wherever it is necessary in your facility e.g., for chemical hazards (29 CFR 1910.132).

OSHA requires that you assess the workplace to determine if hazards are present, or are likely to be present, that necessitate the use of personal protective equipment (PPE). If hazards are present or likely to be present, you must select, and have each affected employee use, the types of PPE that will protect them from the hazards identified in the assessment. The assessment must be formal, written and certified by the person performing the assessment.

You must provide training to each employee required to use PPE. Each employee must be trained in at least the following:

- When PPE is necessary;
- What PPE is necessary;
- How to properly put on, take off, adjust and wear PPE;
- The limitations of the PPE; and,
- The proper care, maintenance, useful life, and disposal of the PPE.

Respiratory Protection

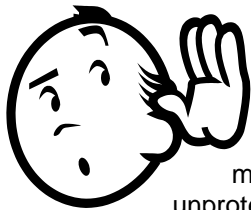
You must provide respirators in areas where engineering controls do not protect the health of employees from inhalation hazards and in emergencies. A respiratory protection program (29 CFR 1910.134) must be developed and maintained. The respiratory program must be regularly evaluated to determine its effectiveness. The program must include training for respiratory users on:

- Selection;
- Use;
- Maintenance;
- Limitations of respirators; and
- Training on the respiratory hazards.

All respirators must be inspected, repaired, and cleaned at least monthly or after each use. You should consult a local physician to determine which employees are physically able to use respiratory equipment. Employees must not use respirators unless they have been authorized and trained to use them properly. Fit testing must be performed before an employee first starts wearing a respirator in the workplace, whenever a different respirator face piece is used and at least annually thereafter. For further information on respiratory protection, visit the OSHA website at www.osha.gov or refer to the resource guide at the end of this document (Appendix F).

13.4 Hearing Conservation

OSHA requires that you implement a continuing, effective hearing conservation program (29 CFR 2910.95) whenever employees are exposed to noise levels of 85 decibels or greater (sound level dBA slow response) over an 8 hour time period. The maximum allowable exposure is 90 dBA for an eight hour TWA.



The TWA is calculated based on the level of noise and length of exposure. For example, a 90 dBA TWA limit means that an employee can be exposed to noise up to 90 dBA for 8 hours. However, as the noise level increases, the length of exposure time decreases. This means that employee exposure to 95dBA (protected or unprotected) may be for no more than four hours before the OSHA threshold is exceeded.

TIP:

If you have to raise your voice or shout to be heard in a work area, you should consider a noise monitoring study to make sure employee noise exposure is below the OSHA threshold.

Minimum requirements of a hearing conservation program include the following:

Monitoring Program - Typically, noise-monitoring studies are performed by an Industrial Hygienist who will sample work areas and provide you with a written report of the results. Remember to repeat noise monitoring whenever there is a change in process, equipment or production that could cause a change in exposure, especially if the changes result in a lower level of noise.

Audiometric Testing Program - If noise exposures are at or above the 85 dBA TWA threshold, affected employees must have a baseline within six months of employment and annual audiometric tests. If the baseline cannot be performed prior to exposure, then the employee must be provided with and wear hearing protection. Your local urgent care or insurance provider usually can perform these tests. You can also check with your Workers' Compensation carrier.

Hearing Protection Devices (HPDs) - HPDs are used to reduce employee exposure to noise. HPDs are required to be used when employee exposure exceeds 90 dBA in an 8 hour TWA. There are many different types of HPDs available from one-time use foam earplugs to earmuffs. Try to provide at least two different types of HPDs so that employees can select the type that is most comfortable and effective for them.

You must be sure that the HPD Noise Reduction Rating (NRR) is sufficient to reduce employee exposure to an acceptable TWA threshold. For example, if your employee is going to be working an 8- hour shift, then the final exposure level needs to be 90 dBA. Appendix B of OSHA 1910.95 has more information on methods for estimating the adequacy of hearing protector attenuation.

Training - If noise exposures are at or above the 85 dBA TWA threshold, affected employees must be provided with a copy of his or her audiometric test results and given training on hearing conservation. The training should include the purpose of audiometric testing and the proper fitting and use of HPDs.

Posting of the standard - If noise exposures are at or above the 85 dBA TWA threshold, then a copy of OSHA's standard must be posted in a location that is accessible by all employees.

13.5 Medical Services and First Aid



You must ensure that medical personnel are available for employees in matters of health (29 CFR 1910.151). In the absence of a clinic or hospital in near proximity to the workplace, someone in your facility must be adequately trained to render first aid. If your shop is in a metropolitan area, it is unlikely that you will need to have first aid trained personnel onsite. Adequate first aid supplies, however, should be readily available.

Where the eyes or body may be exposed to injurious corrosive materials or wherever a chemical or physical hazard could harm the eye, an emergency eyewash unit should be installed for quick flushing of the eyes and body within the work area for immediate emergency use (within 10 seconds of a site splash). Employees must be trained on emergency eye wash use and location. Eyewash units must be tested regularly (weekly) to assure proper operation in case of an emergency. As you may know, 29 CFR 1910.151(c) does not provide specific instruction regarding the installation and operation of emergency eyewash and shower equipment. Therefore, it is the employer's responsibility to assess the particular conditions related to the eyewash/shower unit, such as water temperature, to ensure that the eyewash/shower unit provides suitable protection against caustic chemicals/materials to which employees may be exposed.

13.6 Injury and Illness Prevention Program (IIPP)

Many states require an "Injury and Illness Prevention Program" (IIPP) also called "Accident Prevention", "Workplace Safety" or a "Health and Safety Program". Although not OSHA required in Colorado, this program is the cornerstone of a quality safety program and its implementation is essential for your company to have the safest possible operations. Experience indicates that a high percentage of serious accidents are due in part or totally to employees breaking one or more safety rules. An Injury and Illness Prevention Program gives detailed information concerning the following areas:

- Safety Policy
- Code of Safe Practices
- Disciplinary Action
- Accident Investigation
- Hazard Assessment
- Safety Committee Guidelines

13.7 Injury and Illness Reporting

OSHA requires employers with more than 10 employees to prepare and maintain annual records of recordable occupational injuries and illnesses. OSHA regulations (29 CFR 1904) for injury and illness reporting provide specific record keeping, reporting, and communication requirements for all employers. Some of the specifics include: records retention time, employee access to records, time in which specific types of injuries and illnesses must be reported and record keeping requirements related to change of ownership. Information on injury and illness reporting is available online at www.osha.gov/recordkeeping/index.html. Information about IIPPs is available online from the Cal/OSHA website at www.dir.ca.gov/dosh/dosh_publications/IIPP.html. A list of basic OSHA recordkeeping requirements are listed below (this list is not all-inclusive):

- All OSHA recordable injuries and illnesses that occur in the workplace or during the course of an employee's duties must be entered on the OSHA 300 form (Log of Work-Related Injuries and Illnesses) and an Injury and Illness Incident Report form (OSHA 301 form), or equivalent.
- A copy of the OSHA 300A Summary of Work-Related Injuries and Illnesses for the previous completed year must be posted in the facility no later than February 1 and you must keep it posted where employees can see it until May 1.

- All employers covered by OSHA, regardless of the number of employees, must report any workplace incident that results in a fatality or the hospitalization of three or more employees.
- In the event of a fatality or three or more employees are hospitalized within 3 days of an incident, OSHA must be notified within 8 hours (or less) after the incident (accident) occurred.
- Each year a new OSHA 300 form must be completed and the subsequent OSHA 300 and 301 forms must remain in the employer's files for at least 5 years.

13.8 Machine Guarding

Machine guarding must be provided to protect the operator and other employees in the machine area from hazards such as rotating parts and pinch and nip points (29 CFR 1910.212). Examples of guarding methods are two-hand tripping devices, electronic safety devices, and guarding by location (positioning hazards so they are inaccessible to employees). Guards must be affixed to the machine if possible. Fixed machinery must be secured to prevent shifting. A power cut-off device for equipment must be provided at the operator's working position. Employee training in the safe operation of each machine is required. Machinery must be inspected regularly for safe operation.

Rotating parts, such as gears and pulleys that are located 7 feet or less above working surfaces must be guarded to prevent employee contact with moving parts. Gears, sprockets, chains, belts must be guarded to prevent employees from coming into contact with moving parts.

Grinders must be permanently mounted, grounded with metallic conduit wiring, have adequate adjusted work rests (within 1/8 inch of grinding wheel) and tongue guards (within ¼ inch of wheel), individual on and off switches, ample side and splashguards and dust collection, if necessary (29 CFR 1910.215).

Each piece of equipment should be evaluated at least annually to determine whether the guarding is adequate, effective and properly used by the operators. An evaluation should also be done anytime an employee is injured to determine if the guarding was adequate and whether it was used properly. Once the machine guarding has been evaluated and upgraded, if necessary, each operator should be trained to inspect the guards before using the machine, to use the guards properly, and never to remove or circumvent the guards.

13.9 Lock-out/Tag-out (LO/TO)

The lock-out/tag-out standard (29 CFR 1910.147) applies to servicing and maintenance performed on machines and pieces of equipment in an array of industries. Servicing and maintenance activities are a necessary part of the industrial process, enabling machines or equipment to perform their intended functions. The core of the lock-out/tag-out standard, which permits employees to work on machines or equipment safely, is the shutdown and de-energization of machinery and the isolation of energy source(s), which is accomplished through the application of hazardous energy control measures. This normally consists of the following:

- Stopping the machine or equipment
- Isolating it from its energy source(s)
- Locking or tagging out the energy isolating devices
- Releasing or relieving stored or residual energy



- Verifying that the machine or equipment is safe to work on

All energy control activities must be conducted in accordance with procedures you develop for the purpose of controlling hazardous energy at your facility. In developing the standard, OSHA recognized circumstances in which servicing and maintenance activities would be performed (in full or in part) without locking or tagging out the machinery or equipment. One such circumstance is detailed in 29 CFR 1910.147(f)(1), which recognizes that lock-out/tag-out devices must be temporarily removed in limited situations to permit testing or repositioning and establishes procedures to maintain the integrity of any lock-out/tag-out program. Another such circumstance is detailed in the exception to 1910.147(a) (2) (ii) and is referred to as the “*minor servicing exception*”. OSHA recognized that, “if the servicing operation is routine, repetitive, and must be performed as an integral part of the production process, lock-out or tag-out may not be necessary because these procedures would prevent the machine from economically being used in production. The exception provides that: minor tool changes and adjustments and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

The inch-safe service technique is an example of an alternative technique effectively utilized in the printing & imaging industry. The following summarizes the essential elements of the *inch-safe-service technique*, including safeguarding practices. More information is available online at www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=24845.

1. Servicing or maintenance must not be conducted when machine components are moving. Before performing any minor servicing, the machine must be STOPPED, and its drive control must be in STOP/SAFE position.
2. Consistent with the provisions contained in 1910.147(f)(1), procedures to INCH a machine must include a pre-startup check to assure the safe positioning of employees and to assure that all tools, etc. are positioned so that they do not create a hazard for employees.
3. DEACTIVATE the SAFE function immediately before safely inching the machine component for positioning purposes.
4. By use of the INCH control, the components of the machine are moved to their desired position. Immediately thereafter, the drive control is placed on STOP/SAFE by each employee working in a hazardous area before beginning or resuming the minor servicing work activity.
5. Steps (2) through (4) are repeated as necessary until the minor servicing is completed.

The following tasks are examples of minor servicing activities commonly performed in the printing industry. For industry-specific examples, contact your industry trade association or your OSHA consultant.

- Clearing certain types of paper jams;
- Minor cleaning, lubricating and adjusting operations;
- Certain plate and blanket changing tasks; and
- Paper webbing and paper roll changing (most cases).

It is important to note that the lock-out/tag-out standard applies whenever employees engaged in servicing or maintenance bypass guards or otherwise become exposed to hazardous energy; if employees performing servicing or maintenance are not exposed to hazardous energy, the standard does not apply.

The lock-out/tag-out standard complements the requirements for machine safety prescribed by various general industry standards in 29 CFR Part 1910, and an employer may avoid the requirements of the lock-out/tag-out standard, if the employer protects employees from exposure to hazards throughout the servicing and maintenance process by using machine guarding in accordance with the *Machine Guarding*

requirements of 29 CFR Part 1910.212 (Subpart O). In other circumstances, such as during some machine set-up operations, it is necessary to supplement lock-out/tag-out procedures with machine guarding methods to adequately protect employees from the hazardous energy.

Except in an emergency, a lock-out/tag-out device must not be removed by any person other than the person installing it on the equipment. In an emergency, only authorized personnel must remove the lock-out/tag-out device and authorized personnel shall follow approved procedures. A list of company rules and procedures should be given to any person that may use a lock-out/tag-out device in your facility.



13.10 Emergency Action and Fire Prevention Plans

Any facility that employs more than 10 people must develop a written Emergency Action and Fire Prevention Plan (29 CFR 1930.38 and .39). These plans must be in writing, be kept in the workplace, and be made available to employees for review. However, an employer with 10 or fewer employees may communicate the plan orally to employees. The plan(s) should cover emergencies that an employer may reasonably expect to occur in the work place. Examples are: fire, toxic chemical releases, hurricanes, tornadoes, blizzards, floods and others disasters. The plan(s) should include items such as:

- Fire hazards in the facility;
- Proper handling and storage procedures for chemical hazards;
- Procedures for reporting a fire or other emergencies;
- Procedures for emergency evacuation, including type of evacuation and exit route assignments;
- Procedures to be followed by employees who remain to operate critical plant operations;
- Fire protection equipment and maintenance.
- Procedures to account for all employees after evacuation;
- Availability and use of fire extinguishers, alarm systems, and automatic suppression systems;
- Responsibilities and means of egress during fire emergencies, including properly marked exits; and,
- Fire extinguisher operation and maintenance (must be inspected monthly).

13.11 Electrical Safety

Electrical safety has long been recognized as a serious workplace hazard, exposing employees to electric shock, burns, fires and explosions. OSHA's electrical standards are based on the National Fire Protection Association Standards NFPA 70, National Electric Code, and NFPA 70E, Electrical Safety Requirements for Employee Workplaces. Electrical accidents are largely preventable through safe work practices. OSHA electrical safety-related work practices are outlined in 29CFR.331 through .335. Examples of these practices include the following:

- De-energizing electric equipment before inspection or repair.
- Keeping electric tools properly maintained.
- Exercising caution when working near energized equipment.
- Using appropriate protective equipment.
- Inspection and repair of frayed wiring.

All employees should be trained to be thoroughly familiar with safety procedures for their particular jobs. Moreover, good judgment and common sense are integral to preventing electrical accidents.

Cords, Equipment, and Tool Grounding

- Make sure all equipment and extension cords bear the mark of an independent testing laboratory such as UL, CSA, ETL or MET Labs.

Here are some ways to avoid electrical shock:

- Keep electrical cords away from traffic areas and heat or water sources that could damage the insulation & create a shock hazard.
- Don't use an extension cord as a replacement for permanent wiring.
- Never use cords that are cracked, damaged, or broken.

- Protect flexible cords and cables from physical damage. Check cords for cut, broken, or cracked insulation. Cover cords to prevent a trip hazard.
- Keep slack in flexible cords to prevent tension on electrical terminals.
- Make sure the insulating qualities of a splice are equal to or greater than the original cord.
- Extension cords are for temporary use. Install permanent wiring when use is no longer temporary.
- Electrical panels must have 36 inches accessibility and be properly marked.
- Verify that all three-wire, tools and equipment are grounded.
- Water, electrical equipment, and power cords do not mix! Use GFCI protection in wet or damp environments.
- Ground exposed parts of fixed equipment that could be energized.
- Use non-conductive tools whenever possible.
- Always double-check the operation of your voltage testers by testing a live circuit.



You can help increase electrical safety awareness by making sure those in your workplace understand basic electrical safety guidelines. Posting labels or signs reminds employees to follow established safety procedures.

13.12 Fluorescent Lamp Safety

All lamps for general illumination must be protected from accidental contact or breakage by a suitable fixture or lamp holder with a guard (29 CFR 1910.305(a) (2) (ix)). If the lamps are within 7.0 feet of the floor and they have the potential to be exposed to physical damage (e.g., struck by an employee working or operating nearby equipment), they must be protected (29 CFR 1910.305(a) (4) (v)).

Fixtures, lamps, rosettes, and receptacles may have no live parts normally exposed to employee contact unless they are at least 8 feet above the floor (29 CFR 1910.305(j)(1)(i)).

13.13 Air Compressor Safety

Air gun manufacturers specialize in the design and manufacture of air gun equipment, which meets or exceeds OSHA requirements (29 CFR 1910.242). Output pressure, chip guarding and noise level safety features are built into most guns.



Employees using an air hose for clean up, cannot use that hose unless the psi is less than 30, and then only with proper personal protective equipment e.g., gloves and safety glasses or goggles. If the air hose has a psi greater than or equal to 30 it cannot be used for clean up even with personal protective equipment such as gloves or eye protection. Under no circumstances may employees use compressed air to clean off clothing or any part of their body. Air pressures as low as 5-10 psi have been known to cause serious injury. The OSHA regulation pertains only to the cleaning of parts or objects, **NOT PEOPLE.**

Also, the air hose must have “effective chip guarding”. That is, there should be some means in place to protect the user from having chips blown back at them. This may be accomplished by using a “Cone Air Nozzle”. A ‘Cone Air Nozzle’ redirects some of the air through small vents creating an invisible cone around the main air stream. However, it is still important to protect any other co-worker from projectiles etc., caused by air cleaning by employing the use of baffles or screens.

If OSHA were to visit your facility and test the end of your air hose using an air gauge designed for that purpose and the result is greater than 30 psi, a citation will be issued. Furthermore, you must be sure to use a ‘safety nozzle’. A safety nozzle is a nozzle that is designed to redirect the flow of air from the main

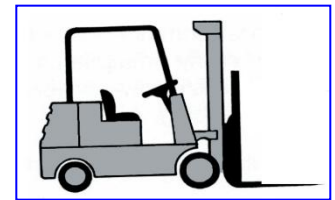
opening to an alternate or side openings should the tip of the nozzle be “dead-ended”. Using just rubber-tipped nozzles are not allowed if they will not allow for redirection of airflow.

To summarize, be sure to use the following checklist to be sure your facility is in compliance with the regulations regarding the use of air hoses.

1. Use safety nozzles that allow for redirection of airflow in the event of ‘dead-ending’.
2. Keep airline pressure to the nozzle to less than 30 psi.
3. Provide proper personal protective equipment to employees e.g., gloves and eye protection commensurate with the potential hazards.
4. Provide for chip guarding e.g., using cone air nozzles or screens or baffles. Note: Make sure all other employees in the area are also protected from possible projectiles.
5. Use proper air hose connections e.g., not “radiator-type” clamps.
6. Do not allow air hoses to become trip hazards.
7. Be sure all hoses, compressors are in good working order, conduct periodic maintenance.

13.14 Forklift Safety

OSHA requires that all employees operating a forklift are trained and follow specific procedures for operation and maintenance of powered industrial trucks (PIT). The OSHA reference for Powered Industrial Trucks (forklifts) is 29 CFR 1910.178. This section provides a brief overview of some of the forklift safety and training requirements.



Safe operating procedures must be followed according to the OSHA standard. Forklifts must be kept in good condition. Prior to use of the forklift each shift, a check of the following items must be conducted by the operator:

- Lights
- Horn
- Brakes
- Leaks
- Warning Beacon

The forklift must not be placed into service if the inspection shows any condition adversely affecting the safety of the vehicle. Where industrial trucks are used on a round-the-clock basis, they must be examined after each shift. If any deficiencies are noted, the unit must be placed *OUT OF SERVICE* until the problem has been corrected. Failure to conduct and document the daily inspection is a common forklift safety violation.

You must ensure that each powered industrial truck operator in your facility is competent to operate a PIT safely. The training consists of three elements:

- Formal training (lecture, interactive computer, written material)
- Practical training (site-specific, demonstrations by the trainer and practical exercises performed by the trainee)
- Evaluation of the operator's skill in the workplace

Anyone who has the knowledge, training, and experience to train and evaluate forklift operators can conduct the training. All employees must be evaluated every three years to ensure that they are still operating the forklifts in a safe manner. You must keep a record of forklift training and evaluations.

Records should include the following:

- The name of the operator,
- Date of the training,
- Date of evaluation, and
- The name of the person(s) giving the training and evaluation.

Initial training must include the following topics:

General Forklift Topics:	Workplace-specific Topics:
Operating instructions, warnings and precautions for types of industrial truck the operator will be authorized to operate.	Surface conditions where the vehicle will be operated.
Differences between the forklift and an automobile.	Composition of loads to be carried and load stability.
Vehicle controls and instrumentation: Where they are located, what they do and how they work.	Load manipulation, stacking and unshackling.
Engine or motor operation.	Pedestrian traffic where the vehicle will be operated.
Steering and maneuvering.	Narrow aisles and other restricted places where the vehicle will be operated.
Visibility (including restrictions due to loading).	Hazardous (classified) locations where the vehicle will be operated.
Fork and attachment adaptation, operation and use limitations.	Ramps and other sloped surfaces that could affect the vehicle's stability.
Vehicle capacity.	Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
Vehicle stability.	Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.
Vehicle inspection and maintenance that the operator will be required to perform.	Hands-on demonstration using the type of vehicle that the operator will actually be using.
Refueling and/or charging and recharging of batteries.	Changes in workplace conditions that could affect safe operation (such as: new trenches, new worker access routes or new staging areas on construction sites).
Operating limitations.	
Other operating instructions, warnings or precautions listed in the operator's manual for the types of vehicle that the employee is being trained on.	

Refresher training, including an evaluation of the effectiveness of that training, must be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. An evaluation of each operator's performance must be conducted at least once every three years. Further information on powered industrial truck safety is available online at www.osha.gov.

13.15 Bloodborne Pathogens Program

Bloodborne pathogens (BBP) are infectious materials in blood that can cause disease in humans, including hepatitis B and C and human immunodeficiency virus or HIV. OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) details what you must do to protect employees whose jobs put them at a reasonable risk of coming into contact with blood and other potentially infectious materials. The focus of the regulation is the creation of a written Exposure Control Plan which describes how the employer will protect employees from exposure. If your employees are not routinely "occupationally-exposed" to bodily fluids, particularly blood, then they do not need to have a bloodborne pathogens program (BBP). OSHA defines **Occupational Exposure** as: "reasonably anticipated skin, eye or mucous membrane contact



with blood or other potentially infectious materials that may result from the performance of an employee's duties".

Remember, this standard was primarily developed for healthcare workers and related occupations. The BBP standard can apply to General Industry if, at any time, there exists a situation where an occupational exposure is likely. If it is determined that the workplace does indeed present situations where exposure could occur, your facility must then produce a written exposure control program and comply with all the required elements as outlined in the BBP Standard e.g., use of engineering and work practice controls to minimize exposure (sharps disposal containers, labels and signs, procedures for hand washing, etc.), personal protective equipment (e.g., gloves, masks), annual training and maintenance of employee medical and training records.

Also, if you keep a BBP Spill Kit onsite, it is recommended that you segregate this kit from other first aid kits. This will minimize its use for the general workplace population. Remember, the only person that should be using a BBP spill kit is someone cleaning up their own blood. Never allow an employee to clean up anyone else's blood.

OSHA's website provides more in-depth information about bloodborne pathogens at www.osha.gov/SLTC/bloodborne pathogens.

13.16 OSHA Recordkeeping

Recordkeeping is an important part of compliance. At a minimum, every small business should retain the following records related to health and safety:



- OSHA Form 300/300A. Remember, your summary form for the previous year must be posted from February 1 to May 1 of the following year.
- Employee Right-to-Know, Personal Protective Equipment, Lock-out/Tag-out and other training records. (e.g., dates, names of employees, trainer and a description of the training provided).
- MSDS documents for all workplace chemicals used in the past 30 years or that are currently being used.
- Noise monitoring studies, audiometric tests and training records associated with a Hearing Conservation Program.
- Industrial hygiene monitoring and/or chemical exposure data.
- Hazard assessment documentation for PPE and other health and safety programs.
- Documentation of written plans or programs such as a fire prevention plan, respiratory protection program, lock-out/tag-out, etc.
- Maintenance and recordkeeping required under PPE, Respirator, LO/TO and other standards.

Your facility must have a legible and conspicuous sign, informing employees of their right to information regarding toxic substances found in the workplace. This must be posted in the workplace, such as on employee bulletin boards or similar locations.

13.17 OSHA – Top Ten Violations

	Top Ten OSHA Violations
<input type="checkbox"/>	Failure to control hazardous energy (no lock-out/tag-out program).
<input type="checkbox"/>	Failure to develop a Hazard Communication Plan or Training.
<input type="checkbox"/>	Failure to develop a Forklift Safety Program or Training.
<input type="checkbox"/>	Failure to follow safe practices for Electrical Hazards (wiring methods, general safety procedures).
<input type="checkbox"/>	Failure to provide adequate machine guarding.
<input type="checkbox"/>	Failure to provide adequate Personal Protective Equipment (PPE) or Training.
<input type="checkbox"/>	Failure to develop an adequate Emergency Evacuation Plan or Training.
<input type="checkbox"/>	Failure to follow fire/evacuation procedures (e.g., lack of fire extinguisher training, fire extinguishers are inaccessible, exit lights are out, or exit doors are blocked).
<input type="checkbox"/>	Failure to maintain/post OSHA 300A forms.
<input type="checkbox"/>	Failure to comply with Occupational Noise Exposure Requirements.

For more information on OSHA requirements, refer to the resource guide in Appendix F or visit the OSHA website at www.osha.gov.



14.0 Additional Considerations

14.1 Hazardous Material Handling and Storage

The storage and handling of flammable and combustible materials are governed by OSHA regulations and the Fire Prevention Division at the City and/or County level. If the local fire codes are more stringent than OSHA regulations, which is almost always true, then the local fire codes need to be followed. Most fire departments use the International Fire Code.

The fire code requires limits of quantities of flammable and combustible liquids in your facility. OSHA and the Internal Fire Codes use the National Fire Protection Associations (NFPA) classification system where flammable substances are Class I and combustibles are Class II and Class III. The classes are further broken down as follows:

- Class 1A (flash point below 73° F and a boiling point below 100° F)
- Class 1B (flash point below 73° F and a boiling point above 100° F)
- Class 1C (flash point above 73° F and below 100° F)
- Class II (flash point above 100° F)
- Class IIIA (flash point above 140° F and below 200° F)
- Class IIIB (flash point above 200° F)

The classification of the liquid will determine the quantity of product that can be stored in your building. As an example, a manufacturing operation can keep 30 gallons of a Class 1A liquid "in storage" without any special protection. Special protection means fire sprinklers or a flammable liquid cabinet. To exceed that amount, the special protection is required.

Table 10 lists the quantities of flammable and combustible liquids that are allowed in an area without any special protection. This table is based upon the requirements from the 2006 International Fire Code (most fire departments use the 2006 IFC when conducting inspections).

Example of Quantities of Flammable and Combustible
Liquids Allowed in an Area without Special Protection

Table 10

Class of material	Storage (gallons)	Open Use (gallons)
Class 1A	30	10
Class 1B & 1C	120	30
Class II	120	30
Class IIIA	330	80
Class IIIB	13,200	3,300

Contact your local fire department or fire district concerning specific quantities of product that can be stored in your business and the proper storage procedures (refer to Appendix F, "Resources").

14.1.1 NFPA Requirements for Storage in Process Areas

- Do not use glass or open containers for transportation or storage of liquids.
- The volume of Class I, Class II, and Class IIIA liquids stored in a storage cabinet shall not exceed 120 gallons.
- Class I liquids must not be dispensed into metal containers or tanks unless metal to metal contact is maintained during filling e.g., bonded and grounded.
- In an industrial occupancy, additional storage cabinets are permitted if a minimum of 100 ft. is maintained between each group and the total volume of each group does not exceed 360 gallons.
- Class I and Class II liquids must be kept in original shipping containers or metal containers or tanks when not in use.
- Ignitable and reactive wastes must be stored at least 50 feet from your property line.
- There are local and state requirements regarding the location of floor drains in proximity to hazardous material and waste storage. Open floor drains are not allowed near storage areas.

14.2 Hazardous Materials Inventory Statement (HMIS)

If your business uses, stores or handles hazardous materials and quantities exceed the permit thresholds listed in the Uniform Fire Code (UFC), you are required to obtain an annual Hazardous Materials Permit from your local fire department. Permit levels (based on aggregate quantities of hazardous materials used or stored) can be obtained from your local Fire Department. The Hazardous Materials Permit constitutes permission to maintain, store, use or handle materials or conduct processes that produce conditions hazardous to life or property. The following items are typically required to obtain your Hazardous Materials Permit:

- General Information form
- Chemical Inventory Report (a spreadsheet with quantities of hazardous materials used/stored and a aggregate sheet that totals the materials by hazard class)
- Hazardous Materials Management Plan (HMMP)
- Facility Graphic Maps
- Information on NFPA placarding (a sign or notice regarding chemical hazards at your facility).

A list of local fire department contacts is available online at <http://dfs.state.co.us/FireDeptInfo.htm>.

Note: if you have already completed chemical reporting calculations for the Emergency Planning Community Right-to-Know Act (EPCRA) discussed in Section 12.0, you may be able to use these calculations to determine your hazardous material reporting requirements.

15.0 Continual Improvement



A never-ending process . . .

Many of you have heard the word "sustainability" used to refer to a business initiative or process and you probably wonder how it fits with continuous improvement activities in your own business. Many businesses are finding out that sustainability is good business and, done well, can be very profitable for an organization.

Continuous improvement means a constant striving to provide better service and a higher quality product. It requires a constant reassessment of current procedures and establishment of new goals for their betterment. Continuous improvement efforts are focused on the elimination of non-value-added waste to produce exactly what the customer wants, when they want it, in the quantity they specify -- and to use the minimum amount of time, material, space and labor to accomplish this at the lowest possible cost.

Sustainability is all about minimizing the use of natural resources like materials, energy and even replenishable resources like trees, while reducing solid waste and hazardous materials from our production processes and minimizing our carbon footprint. In addition to reducing cost, the commitment to sustainability can be motivational for your employees, many of whom are concerned about our planet's future and the lifestyle we will leave behind for future generations. .

Stop and think for a moment about all the costs you incur in your operations for things that don't end up in your final product and that customers pay for -- things like excess space (that you pay to heat, cool, insure and maintain), materials that end up in your waste stream that you pay to dispose of (have you ever looked at what goes into your dumpster and gets hauled to the landfill?), excess inventory that you either write off against profit and scrap or try to sell at a deep discount, and things like packaging materials that you pay for (both inbound and outbound) that end up in landfills. These all represent a cost to your business and, in many cases, an unsustainable waste of natural resources.

Use this workbook. Incorporate its concepts into your business practices. Periodically evaluate your practices and the status of all of your environmental health and safety requirements through a comprehensive Sustainable Management System (SMS). You are challenged to go beyond compliance and reduce your liabilities and your costs, improve your bottom line, and provide a better and safer environment for your employees and your community. The Compliance Certification Checklist and Workbook have been designed to help you conduct regular self-assessments, get back on track, and work towards continual improvement. Make a point to evaluate at least one sustainable idea or pollution prevention opportunity each year and move your company towards a more sustainable future, beyond compliance. Your Sustainable Management System (SMS) can help you manage your environmental concerns, measure your performance and document your successes on the path to environmental leadership for your company.

Appendix A

DEFINITIONS

Accumulation – accumulation of hazardous waste is different from “storage”. Accumulation time is the time allowed under RCRA to accumulate hazardous waste before a generator is required to transport the hazardous waste to a permitted treatment, storage, or disposal facility (TSDF). The allowable accumulation time period depends on your generator status. Allowable accumulation time periods are outlined in Section 6.7.

Actual Uncontrolled Emissions – actual air pollutant emissions before considering the efficiency of air pollution control equipment. Note: Your facility is billed an annual emissions fee based on uncontrolled actual emissions in tons per year and not on the quantity of air pollutant emissions requested on your air permit.

Acutely Hazardous Waste - Solid wastes determined to be very dangerous even in small amounts. Includes wastes listed in 6CCR 1007-3, Section 261.31 that are followed by the symbol (H), and all of the "P" wastes listed in Section 261.33 (e), that have been found to be fatal to humans in low doses e.g., some cyanide and mercury compounds. Few acutely hazardous wastes are generated in the printing sector.

Aerosol – material dispensed from its container as a mist, spray or foam by a propellant under pressure.

Air Purifying Respirator (APR) – a respirator that removes contaminants from the air by passing air through an air purifying filter before it reaches the user.

Air Emissions - any discharge or release of an air contaminant into the ambient air.

Attainment areas - Any area within Colorado in which the ambient air concentrations of any designated pollutants are in compliance with National Ambient Air Quality Standards (NAAQS).

Audiometric tests – testing of a person’s ability to hear various sound frequencies.

Boiling point – temperature at which the vapor pressure of a substance is equal to the external pressure (temperature a liquid turns into gas).

Carbon footprint – the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO₂e).

CDPS – Colorado Discharge Permit System

CFLs – a compact fluorescent light bulb. Look for Energy Star qualified CFLs.

Characteristic waste – designated as characteristic because of constituents in the waste or the process generating the waste and has waste codes beginning with “D”:

D001 – Ignitable, any liquid waste that has a flashpoint below 140°F (60°C). Any non-liquid that is capable of spontaneous combustion under normal conditions or an ignitable compressed gas or oxidizer. Examples include blanket and roller washes, isopropyl alcohol, solvent-based coatings, and some contaminated rags.

D002 – Corrosive, an aqueous (water-based) material with a pH less than 2.0 or greater than 12.5. Examples include film/plate processing chemicals, acids, waste battery acid, and highly alkaline cleaners.

D003 - Reactive, unstable materials, potentially explosive or produce toxic gases when mixed with water, air or other incompatible materials. Examples include waste bleaches and oxidizers.

D004 – Toxic, contain specific chemicals above listed threshold levels. Toxicity is typically determined using the Toxicity Characteristic Leaching Procedure or TCLP test (e.g., clean-up solvents, plate processing chemicals, and corrosive cleaners).

Climate change – any significant change in measures of climate (e.g., temperature, precipitation or wind) lasting for an extended period (decades or longer) due to natural variability or to human activity.

Combustible – a liquid whose flashpoint is above 37.8°C (100°F) but below 93.3°C (200°F).

Stationary Internal Combustion Engine (ICE) - Any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. *A stationary ICE is not a nonroad engine* as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition. Stationary ICE includes reciprocating ICE, rotary ICE, and other ICE except combustion turbines.

Control Device - the air pollution control equipment used to remove air pollutants generated by a source e.g., a heatset web press.

Extremely Hazardous Substance (EHS) – chemicals that present the most serious hazards during release (in terms of toxicity, reactivity, volatility, combustibility and flammability), regulated under the Emergency Planning and Community Right-To-Know Act (EPCRA). The list of EHS chemicals can be found in EPCRA, Section 302, 40 CFR, Part 355, appendices A & B. The EHS list consists of 360 substances and is included in EPA's List of Lists.

Engineering controls - help reduce exposure to potential hazards either by isolating the hazard or by removing it from the work environment. Engineering controls include mechanical ventilation and process enclosure. They are important because they are built into the work process.

F-listed wastes – specifically listed in the hazardous waste regulations at 6 CCR 1007-3, Section 261.31. These are generally spent cleaning solvents that contain 10% or more of at least one hazardous chemical. If the solvent is an ingredient and not being used for its solvent properties, it would not be an F-listed waste.

Flammable – material that ignites easily and burns rapidly with a flame.

Flash point - temperature at and above which a liquid gives off enough vapor to form an ignitable mixture with air.

Fit Testing – respirators that rely on a mask-to-face seal need to be annually checked to determine whether the mask provides an acceptable fit to a wearer.

Global warming – a gradual increase in the average temperature of the earth's atmosphere that may cause climatic changes.

Greenhouse gas (GHG) – means carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and other fluorinated greenhouse gases.

Guarding - means shielded, fenced, or guarded by position or location.

Hazardous Air Pollutant - an air pollutant that presents, through inhalation or other routes of exposure, a threat of adverse human health effects (e.g., substances that are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, cause reproductive dysfunction or other adverse effects on health or on the environment.

Hazardous Materials (HM) – any material that is required to have a MSDS by OSHA. Examples of hazardous materials are gasoline, oil, diesel fuel, isopropyl alcohol, etc.

Hazardous Substance (HS) – chemicals posing a hazard to human health or the environment, regulated under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) at 40 CFR 302. The HS list is included in EPA's List of Lists.

Hazardous waste – a solid, a liquid, or a contained gaseous material that is no longer used or that no longer serves the purpose for which it was produced and is either stored, disposed or recycled. A hazardous waste is either "listed" in the regulations or exhibits a hazardous "characteristic" or a combination of both. For printers, hazardous wastes can include press/screen cleaning solutions, untreated fixer, parts cleaning solvents, and solvent-based inks, coatings, or adhesives.

Industrial stormwater permit – industrial facilities that discharge industrial stormwater either directly to surface waters or indirectly, through a storm sewer system, must be covered by a permit allowing them to discharge. The SIC Code for the facility usually determines permit coverage.

Industrial Wastewater – any non-domestic wastewater resulting from a process of industry, manufacturing, trade or business, regardless of volume or pollutant content.

Listed wastes – designated as listed wastes because of constituents in the waste or the process generating the waste and have waste codes beginning with "F", "P", "U", or "K". The U and P listed wastes are for those discarded, unused commercial chemical products that are either 100% pure, technical grade or any formulation where the chemical is the active ingredient. K-listed wastes are those from specific industrial manufacturing processes such as lead chrome pigment manufacturing. Of the U, P, or K listed wastes, the only wastes that could be generated by printers are those on the U list (refer to Appendix A).

List of Lists (LOL) – EPA has published a "List of Lists" that is a compendium of the lists of chemicals subject to reporting requirements. The LOL includes CERCLA HSs and EPCRA EHSs as well as EPCRA's 313 Toxic Chemicals and CAA 112R regulated chemicals for accidental release prevention.

Major Source – a stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, considering controls, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

Nip point – point where two gears mesh which can pinch or crush fingers or other body parts.

No Exposure – No industrial materials or activities are exposed to stormwater.

Non-attainment areas – any area within Colorado in which the ambient air concentrations of any designated pollutants are out of compliance with the National Ambient Air Quality Standards (NAAQS).

Non-domestic wastewater - wastewater that is not from a domestic source (e.g., bathrooms, kitchens).

Nonhazardous waste – a waste that does not meet the requirements of a hazardous waste as defined above.

NRR – Noise Reduction Rating, represents the approximate dB(A) noise reduction afforded by the protector.

OSHA – Occupational Safety and Health Administration. OSHA regulations for general industry are outlined in 29 CFR 1910.

Permissible exposure limits (PEL) – regulatory limits on the amount or concentration of a substance in the air.

Personal protective equipment – specialized clothing or equipment worn by employees for protection against health and safety hazards.

Pinch point – point at which it is possible for a part of the body to be caught between moving parts or between moving and stationary parts of a piece of equipment.

Point Source Discharge – stormwater that has come into contact with industrial materials and/or activities and is discharged to surface waters or storm sewers.

Pollution Prevention (P2) – reduction or elimination of discharges or emissions to the environment. P2 can be accomplished by eliminating or reducing the generation of wastes at the source or by using, reusing, or reclaiming wastes once they are generated.

POTW – Publicly Owned Treatment Works means a treatment facility by a District such as Metro District. The treatment works includes any sewers that convey wastewater to the POTW treatment plant.

Pretreatment - reduction or elimination in the amount of pollutants or alteration of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging such pollutants into a POTW.

RCRA – Resource Conservation and Recovery Act. The federal Hazardous Waste regulations listed in 40 CFR Part 261-265.

Reportable Quantities (RQ) – applies to the amount of Hazardous Substances (HSs) or Extremely Hazardous Substances (EHSs) released within a 24-hour period. Note that the 24-hour period is the time frame for *measuring the quantity released, not the time frame for reporting a release*. RQs are included in EPA's List of Lists.

Rolling 12-month – last consecutive 12-month period of time.

Secondary containment - containment external to the primary container; a system installed so that any material that is discharged or has leaked from the primary container is prevented from reaching the soil or ground water outside the system. Secondary containment should be able to contain 110% of the contents of the primary container.

SIC Code – Standard Industrial Classification Codes (SIC) are assigned to the primary activities performed by a company. Manufacturing industries are generally represented by SIC Codes 20-39. A two-digit code, such as 26 or 27 for printers, means that all industries under that heading are covered.

Storage – the maximum quantity of hazardous waste maintained onsite at any given time. The maximum allowable storage quantity is also determined by generator status.

Sustainability - the ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. When a process is sustainable, it can be carried out over and over without negative environmental effects or impossibly high costs to anyone involved.

SWMP – Stormwater Management Plan. The SWMP identifies potential pollutant sources at the facility, assesses the potential of these sources to contribute pollutants from industrial activities to stormwater, and describes appropriate best management practices implemented at the facility to reduce the potential of these sources to contribute pollutants to stormwater discharges.

TLV – threshold limit value; airborne concentration of a substance below which all workers are believed to be protected while exposed to it day after day for 8-hour periods.

TWA – time weighted average, the average amount of a substance you can be exposed to over an eight-hour day.

Universal Waste - low risk hazardous waste generated by a variety of people. This waste has three categories: CRTs, thermostats, batteries and lamps (fluorescent tubes, discharge lamps, mercury vapor lamps, batteries (not auto), and mercury thermostats. This waste must be disposed of properly.

Used Oil - any oil that has been refined from crude oil, or any synthetic oil that has been used and, as a result of such use, is contaminated by physical or chemical impurities e.g., motor oil and refrigeration oils.

U.S. EPA Method 24 – EPA standard analytical sampling method for determination of VOC matter content, density, volume solids, and weight solids of surface coatings.

Volatile Organic Compound (VOC) – organic compounds (containing carbon) that react with nitrogen oxides to form ozone, a regulated pollutant in Colorado. Ozone in the lower atmosphere combines with particles of dust and other materials and contributes to smog formation.

Appendix B

SUSTAINABLE BUSINESS PRACTICES	
	Review Material Safety Data Sheets (MSDS) before purchasing a product. The MSDS provides key environmental, health and safety information. Know before you buy! Remember to maintain current copies of MSDSs for all chemicals in your shop.
	Start by paying attention to what you use. Examine your use of materials by process. Are there new technologies that can replace your existing process or materials and reduce toxics, volatile organic compound (VOC) emissions, waste or your carbon footprint?
	Inventory reduction. Make one person responsible for chemical purchases and inventory control in your department. Decisions should be made on a basis of product performance, environmental and safety requirements, and cost. Store chemicals in a central location. Coordinate your purchasing with environmental recordkeeping so you can track chemical use and wastes to identify reduction opportunities.
	Inventory control. Conduct an inventory to reduce the type and quantity of chemicals used in your facility. Avoid accepting samples from different suppliers and have them take back unused samples. Use multi-task products as much as possible. Date all materials and use the first-in, first-out method of inventory control. Purchase frequently used materials in larger containers.
	Reduce your cleaning solvent usage by improving your solvent management practices and replacing quickly evaporating washes with alternatives that are either low VOC or have low vapor pressure (<10 mm Hg at 68°F). Avoid using F-listed solvents and those with flashpoints below 140°F. Dispense cleaning solvent with a squirt bottle instead of pouring directly from the container to control application rate and reduce evaporation.
	Use a laundry service for rags. After use, remove excess liquids and store in a fireproof container. Gravity drain or use other methods to remove excess solvents prior to laundering.
	Routinely clean and maintain equipment. Regular maintenance, cleaning and adjustments on equipment will increase equipment life; equipment will run better and more efficiently.
	Conserve water. Have the local water utility or water conservation service conduct a water audit of your facility. Establish a preventative maintenance schedule to ensure maximum efficiency of water-using appliances and equipment. Replace high-flow toilets with water-efficient 1.6 gallons or less per flush models. Install low-flow aerators as low as 0.5 gallons per minute for lavatory sinks.
	Recycle. Recycle glass, plastic bottles (#1 and 2), aluminum and steel cans, newspapers, office paper, direct mail and cardboard. Recycle all computers, electronics, toner and inkjet cartridges. Use office paper, toilet tissues, paper towels and paper napkins that contain 30% post-consumer recycled content.
	Conserve energy. Ask your energy company or an energy service to conduct an energy assessment of your facility. Install a programmable thermostat and use the night setback. Use an energy management system to control lighting, heating and cooling. Turn off computers, monitors, printers, copiers and other small appliances such as coffee machines when they are not in use. Use indoor and outdoor sensor lighting.
	Educate your staff. Document your operating procedures including waste reduction and recycling measures. Educate and train staff on purchasing, handling, recycling, and maintenance procedures. Develop an environmental health and safety policy and get buy-in from staff and management.
	Consider xeriscaping. Limit lawn areas. Install low-volume irrigation, use ground cover, mulch or drought-resistant plants; and water only when needed.
	Expand “green” fleets. When replacing light-duty vehicles, replace with hybrids or the highest efficiency vehicles available. Shift diesel vehicles to biodiesel fuel, if feasible.
	Promote your Actions. Let your customers know that you are working toward becoming a “Green Printer”. Let your colleagues know about your accomplishments.

BUSINESS SUSTAINABILITY CHECKLIST

WASTE PREVENTION

	Reduce copying: use electronic distribution to avoid unnecessary document printing, and set copier and printer defaults to two-sided
	Regularly update/purge your mailing list
	Contact catalogue senders and others to reduce the amount of bulk mail and duplicate mailings you receive
	Use marketing materials that require no envelope
	Reuse packaging and shipping materials
	Offer reusable shopping bags and/or discounts for those who use them
	Replace individual hand soap containers with larger, refillable dispensers.
	Use reusable rather than disposable products e.g., dishes, towels, boxes, bags and containers
	Install motion towel dispensers or air dryers near all sink
	Install motion activated soap dispensers
	Prohibit littering at the workplace

RECYCLING

	Recycle paper
	Recycle glass
	Recycle aluminum and other metals
	Recycle plastic bottles, utensils, wrappers and other materials
	Recycle boxes and other cardboard materials
	Recycle toner and inkjet cartridges
	Recycle or properly dispose of all used batteries
	Recycle used cooking oil
	Install signs and distribute instructions on recycling to staff
	Compost food and landscape waste

PURCHASING

	Buy office copy paper with at least 30% recycled content
	Print letterhead and business cards on 100% recycled stock
	Purchase use safer, more eco-friendly alternatives to previously used products for janitorial, pest control and/or facility maintenance
	Purchase recycled or re-manufactured toner cartridges
	Purchase biodegradable or compostable "to go" food containers
	Purchase more materials in bulk
	Use low-emission building materials when remodeling
	Purchase used furniture, equipment or materials
	Exchange or donate unwanted furniture, equipment, scrap materials, etc.
	Purchase from other "green" vendors or service providers
	Purchase more materials and supplies locally to reduce transportation emissions

ENERGY AND WATER CONSERVATION

	Have a professional perform an on-site audit of your energy use
	Track energy usage and share data with employees
	Replace incandescent bulbs with compact fluorescents
	Replace older fluorescent bulbs with energy efficient lighting
	Unplug chargers when not in use
	Use "Energy Star" equipment

BUSINESS SUSTAINABILITY CHECKLIST

ENERGY AND WATER CONSERVATION (CONTINUED)

	Update insulation or windows (includes tinting)
	Use programmable thermostats
	Get an HVAC tune-up or refrigeration tune-up
	Set all computer monitors to turn off after 10 minutes of inactivity
	Turn all computers off at the end of each business day
	Use renewable energy (e.g., solar) or purchase "Green Power" from your local utility
	Use aerators and/or auto shut-off faucets
	Install commercial ultra low-flow toilets
	Install waterless urinals
	Install pre-rinse spray nozzle in kitchen
	Regularly check for and repair leaks in restroom
	Install low-water or no-water landscaping
	Clean outdoor areas with a broom instead of a water hose or air blower
	Use recovered wastewater and/or rainwater

TRANSPORTATION

	Implement policies and practices to encourage employee walking, biking, carpooling, transit and/or telecommuting
	Provide an incentive or reimburse employee travel on public transportation
	Provide an incentive to employees to use alternative transportation
	Use teleconferences or web conferences rather than traveling for face-to-face meetings
	Schedule regular tune-ups for business vehicles; check tire pressure regularly
	Recycle all vehicle fluids (e.g., oil, antifreeze)
	Use hybrid or alternative fuel vehicles

OPERATIONS

	Offer a green or sustainable product or service
	Replace production equipment with energy or water efficient models
	Plant trees, bushes and other xeriscape landscaping for you and your community
	Use recycled or previously used material in manufactured products
	Reduce and recycle waste materials from your manufacturing process
	Adjust work schedules for efficient utility use and reduced traffic from employees and shipping vehicles
	Implement a protocol for employee suggestions for efficiency

INVOLVING STAKEHOLDERS

	Involve employees in developing your green business plan; get their input
	Establish a "green committee" of employees to make the green business plan and to regularly identify new strategies
	Provide training for employees on implementing green business practices
	Institute a green business policy in the employee handbook, making participation in the practices a condition of employment
	Inform suppliers and/or customers about your green business interests and efforts; solicit their suggestions
	Encourage "green" practices by your customers
	Achieve sustainability recognition, awards or certifications for your business
	Participate in local clean-ups events
	Participate in community activities, encourage "green" events
	Attend training sessions (webinars, etc.) on "green" practices for continual improvement

Appendix C

HAZARDOUS WASTE GENERATOR REQUIREMENTS – SUMMARY TABLE			
GENERATOR REQUIREMENT	GENERATOR CATEGORY		
	Conditionally Exempt Small Quantity Generator (CESQG)	Small Quantity Generator (SQG)	Large Quantity Generator (LQG)
Hazardous Waste Determination	Required through process knowledge or analysis (supporting documentation recommended)	Required through process knowledge or analysis (supporting documentation required)	Required through process knowledge or analysis (supporting documentation required)
On-site Storage & Disposal	Part "B" Permit required	Part "B" Permit required	Part "B" Permit required
Monthly Generation Rate	< 1 kg of acutely HW < 100 kg of HW *	< 1 kg of acutely HW > 100 kg but < 1,000 kg of HW *	> 1 kg of acutely HW > 1,000 kg of HW *
Maximum Accumulation	< 1 kg of acutely HW < 1,000 kg of HW *	< 1 kg of acutely HW < 6,000 kg of HW *	No limit
On-site Treatment	Unrestricted (Knowledge of proper & safe treatment methods implied)	Part "B" Permit, Permit-by-Rule, Treat in WWTU or Treat to meet LDR	Part "B" Permit, Permit-by-Rule, Treat in WWTU or Treat to meet LDR
Accumulation Time Period	None	180 days or 270 days if TSD facility is > 200 miles away (30 day extension available)	90 days (30 day extension available)
EPA ID Number	Required if generate >3 gal/yr hazardous waste codes F001, F002, F004 and/or F005	Required	Required
Manifests & LDR	Not Required (recommended)	Required	Required
Exception Reports	Not Required (recommended)	Notify CDPHE within 60 days & include a copy of the Manifest	Contact handler within 35 days, Report to CDPHE within 45 days
Biennial Reports	Not Required	Not Required	Required (March 1 st of even numbered year)
Contingency Plan	Not Required (recommended)	Basic Plan Required	Written Plan Required
Container Management	Not Required (recommended)	Good Condition, Compatible with Waste, Labeled as Haz. Waste, Aisle Space, Lids, Weekly Inspections & Acc. Start Date <u>unless</u> at Satellite Accumulation Area	Good Condition, Compatible with Waste, Labeled as Haz. Waste, Aisle Space, Lids, Weekly Inspections & Acc. Start Date <u>unless</u> at Satellite Accumulation Area, Subparts AA, BB & CC apply
Tank Management	Not Required (recommended)	Good Condition, Compatible with Waste, Labeled as Haz. Waste, Acc. Start Date Tracked & Daily Inspections	Good Condition, Compatible with Waste, Labeled as Haz. Waste, Acc. Start Date Tracked, Daily Inspections. Subparts AA, BB & CC apply & Secondary Containment is Required
Personnel Training	Not Required (recommended)	Basic Training Required	Written Training Plan Required
Record Keeping	Disposal Receipts & Waste Analysis Records (recommended)	Manifests, LDR & Waste Analysis Records	Manifests, LDR, Waste Analysis Records, Training Records, Biennial Reports & Exception Reports
1 kg ~ 1 qt 100 kg ~ 27 gal (~ ½ of a 55 gal drum) or 220 lbs, depending on material 1,000 kg ~ 270 gal (~ 5/55 gal drums) or 2,200 lbs, depending on material 6,000 kg ~ 1,620 gal (~30/55 gal drums) or 13,200 lbs, depending on material For liquids, specific gravity x 8.34 lb./gallon = density			

Characteristics of *Hazardous Waste*

<u>Characteristic</u>	<u>Criteria Of Characteristic Waste</u>	<u>Possible Printing-Related Sources</u>	<u>Waste Code</u>
Ignitability	<ul style="list-style-type: none"> • A liquid (except solutions containing less than 24% alcohol) that has a flash point below 140°F (60°C); or • A non-liquid capable of spontaneous and sustained combustion under normal conditions; or • An ignitable compressed gas (as defined by DOT); or • An oxidizer (as defined by DOT) 	<ul style="list-style-type: none"> • Chemical products such as blanket and roller washes, cleanup solvents, isopropyl alcohol, and inks. • Shop towels being thrown out for disposal 	D001
Corrosivity	<ul style="list-style-type: none"> • An aqueous material with a pH less than 2.0 or greater than or equal to 12.5; or • A liquid that corrodes steel at a rate greater than ¼ inch per year at a temperature of 130° F (55° C) 	<ul style="list-style-type: none"> • Plate and film processing chemicals, particularly etching chemicals. Acids, waste battery acid, and alkaline cleaners, depending on their pH. 	D002
Reactivity	<ul style="list-style-type: none"> • Normally unstable and reacts violently without detonating; or • Reacts violently or forms an explosive mixture with water; or • Generates toxic gases, vapor, or fumes when mixed with water; or • Contains cyanide or sulfide and generates toxic gas vapors or fumes at a pH between 2 and 12.5. 	<ul style="list-style-type: none"> • Waste bleaches and oxidizers 	D003
Toxicity	<ul style="list-style-type: none"> • Contains specific toxic contaminants above threshold levels; • waste should be tested 	<ul style="list-style-type: none"> • Waste fixer, plate processing chemicals, ink, and cleanup solvents, and specific pesticides. 	D004-D043

LISTED HAZARDOUS WASTES

Key Resources

By definition, EPA determined that some specific wastes are hazardous. These wastes are incorporated into lists published by the Agency. These lists are organized into three categories:

1. **The F-list** (non-specific source wastes). This list identifies wastes from common manufacturing and industrial processes, such as solvents that have been used in cleaning or degreasing operations. Because the processes producing these wastes can occur in different sectors of industry, the F-listed wastes are known as wastes from non-specific sources. Wastes included on the F-list can be found in the regulations at [40 CFR §261.31](#).
2. **The K-list** (source-specific wastes). This list includes certain wastes from specific industries, such as petroleum refining or pesticide manufacturing. Certain sludges and wastewaters from treatment and production processes in these industries are examples of source-specific wastes. Wastes included on the K-list can be found in the regulations at [40 CFR §261.32](#).
3. **The P-list and the U-list** (discarded commercial chemical products). These lists include specific commercial chemical products in an unused form. Some pesticides and some pharmaceutical products become hazardous waste when discarded. Wastes included on the P- and U-lists can be found in the regulations at [40 CFR §261.33](#).

For more information refer to:

[Hazardous Waste Listings - A User-Friendly Reference Document, Draft, March 2008 \(PDF\)](#) at www.epa.gov/waste/hazard/wastetypes/pdfs/listing-ref.pdf (118 pp, 612K, [About PDF](#))

[Waste Listing Determinations, Delisting, and Exclusions](#) at www.epa.gov/waste/hazard/wastetypes/wasteid/delisting.htm.

Examples of F-Listed Wastes

- F001** The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of 10% or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F002** The following spent halogenated solvents: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F003** The following ignitable non-toxic solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing before use, one or more of the above non-halogenated solvents, and a total of 10% or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F004** Toxic non-halogenated solvents: Aerosols, cresylic acid and nitrobenzene, all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and a total of 10% or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F005** The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

Emergency Contacts Telephone Posting

Post this sheet near the telephone(s) in areas where hazardous waste is handled or stored

Company Emergency Coordinator(s)	Work Phone	Pager # or Home Phone
_____	_____	_____
_____	_____	_____

Fire Department Phone _____

Police Department Phone _____

Hospital Phone _____

Colorado 24-hour Emergency Response Line Phone 1-877-518-5608

National Response Center (24-hour) Phone 1-800-424-8802

Location of Emergency Response Equipment

***Fire extinguishers**

***Fire alarm (if present)**

***Spill control material**

***Special equipment
(if present)**

(Fulfills emergency contact telephone posting requirements for SQG's)

Appendix D

NEGLIGIBLY REACTIVE VOLATILE ORGANIC COMPOUNDS (NRVOCs)

- Methyl Acetate
- Acetone
- Methane
- Ethane
- Methylene Chloride (Dichloromethane)
- 1,1,1-Trichloroethane (Methylchloroform)
- 1,1,2-Trichloro-1,2,2-Trifluoroethane (CFC-113)
- Trichlorofluoromethane (CFC-11)
- Dichlorodifluoromethane (CFC-12)
- Chlorodifluoromethane (HCFC-22)
- Trifluoromethane (HFC-23)
- 1,2-Dichloro 1,1,2,2-Tetrafluoroethane (CFC-114)
- Chloropentafluoroethane (CFC-115)
- 1,1,1-Trifluoro 2,2-Dichloroethane (HCFC-123)
- 1,1,1,2-Tetrafluoroethane (HCFC-134A)
- 1,1-Dichloro 1-Fluoroethane (HCFC 141B)
- 1-Chloro 1,1-Difluoroethane (HCFC-142B)
- 2-Chloro-1,1,1,2-Tetrafluoroethane (HCFC-124)
- Pentafluoroethane (HFC-125)
- 1,1,2,2-Tetrafluoroethane (HFC-134)
- 1,1,1-Trifluoroethane (HFC-143A)
- 1,1-Difluoroethane (HFC-152A)
- Parachlorobenzotrifluoride (PCBTf)
- Cyclic, Branched, or linear completely methylated siloxanes
- Perchloroethylene (Tetrachloroethylene)
- 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)
- 1,3-dichloro-1,1,1,2,2,3-pentafluoropropane (HCFC-225cb)
- 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee)
- Difluoromethane (HFC-32)
- Ethylfluoride (HFC-161)
- 1,1,1,3,3,3-hexafluoropropane (HFC-236fa)
- 1,1, 2, 2,3-pentafluoropropane (HFC-245ca)
- 1,1,2,3,3-pentafluoropropane (HFC-245ea)
- 1,1,1,2,3-pentafluoropropane (HFC-245eb)
- 1,1,1,3,3-pentafluoropropane (HFC-245fa)
- 1,1,1,2,3,3-hexafluoropropane (HFC-236ea)
- 1,1,1,3,3-pentafluorobutane (HFC-365mfc)
- Chlorofluoromethane (HCFC-31)
- 1 chloro-1-fluoroethane (HCFC-151a)
- 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)
- 1,1,1,2,2,3,3,4,4-nonfluoro-4-methoxy-butane (C4F9OCH3)
- 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OCH3)
- 1-ethoxy-1,1,2,2,3,3,4,4,4-nonfluorobutane (C4F9OC2H5)
- 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OC2H5)
- 1,1,1,2,2,3,3,-heptafluoro-3-methoxy-propane (HFE-7000)
- 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2(trifluoromethyl)hexane (HFE-7500)
- 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea)
- methyl formate (HCOOCH₃)
- Tertiary Butyl Acetate (2-Butanone)
- (1)1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300)
- Propylene carbonate
- Dimethyl carbonate
- Perfluorocarbon compounds which fall into these classes:
 - Cyclic, branched or linear, completely fluorinated Alkanes
 - Cyclic, branch or linear, completely fluorinated Ethers with no unsaturations
 - Cyclic, branched or linear, completely fluorinated tertiary Amines with no unsaturations
 - Sulfur-containing Perfluorocarbons with no unsaturations and with Sulfur bonds only to Carbon and Fluorine

LIST OF HAPS AND METHOD FOR IDENTIFYING HAP REPORTING THRESHOLDS**AIR CONTAMINANT EMISSIONS NOTICES FROM APPENDIX A, REGULATION NO. 3
Method for Determining De Minimis Levels For Non-criteria Reportable Pollutants**

The following procedures must be followed in order to determine the appropriate de minimis (minimum) reporting level for each pollutant that is emitted from each emission point at a contiguous site. If you do not wish to use the three-scenario approach at your facility, you may elect to use Scenario 1 for all emission points.

DEFINITIONS

Release Point - the lowest height above ground level from which the pollutants are emitted to the atmosphere.

Property Boundary - the distance from the base of the release point to the nearest property boundary.

Point - an individual emission point or a group of individual emission points reported on one Air Pollutant Emission Notice as provided for in Part A, section II.B.4.

METHODOLOGY

To determine the de minimis level for a single pollutant being emitted from a point (single or grouped).

STEP 1:

Determine which of the three scenarios below applies to the emission point. If different scenarios can be applied to the same emission point, use the highest numbered scenario that applies. In the case of grouped emission points, use the lowest scenario number (for the entire group) that applies to any of the single emission points within the group.

Scenario 1: Release point less than 10 meters or property boundary less than 100 meters;

Scenario 2: Release point equal to or greater than 10 meters, but less than 50 meters, or property boundary equal to or greater than 100 meters, but less than 500 meters; or

Scenario 3: Release point equal to or greater than 50 meters, or property boundary equal to or greater than 500 meters.

STEP 2:

Use Appendix B to identify which of the three bins (Bin A, B, or C) the chemical is listed under.

If the pollutant is not listed, it does not have to be reported unless it is included in a chemical compound group.

STEP 3:

Use the table below to determine the de minimis level. All values are in pounds per year.

Chemical Bin	<u>Scenario 1</u> De Minimis	<u>Scenario 2</u> De Minimis	<u>Scenario 3</u> De Minimis
Bin A	50	125	250
Bin B	500	1250	2500
Bin C	1000	2500	5000

STEP 4:

Repeat the above steps for each pollutant emitted from each emission point (single or grouped). One Air Pollutant Emission Notice must be filed for each emission point that emits one or more chemicals above the de minimis level.

LIST OF HAPS

REGULATION NO. 3
AIR CONTAMINANT EMISSIONS NOTICES
-APPENDIX B-

Non-criteria Reportable Pollutants (Sorted Alphabetically)

Note: HAP means federal, or federal and state hazardous air pollutant
HAPs means state-only hazardous air pollutant
No Designation means not a HAP, but still reportable.

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAP	71556	1,1,1-Trichloroethane (Methyl chloroform)	C
HAP	79345	1,1,2,2-Tetrachloroethane	A
HAP	79005	1,1,2-Trichloroethane	A
HAP	75354	1,1-Dichloroethylene (Vinylidene chloride)	A
HAP	57147	1,1-Dimethyl hydrazine	A
HAP	120821	1,2,4-Trichlorobenzene	A
HAP	96128	1,2-Dibromo-3-chloropropane	A
HAP	122667	1,2-Diphenylhydrazine	A
HAP	106887	1,2-Epoxybutane	A
HAP	75558	1,2-Propylenimine (2-Methyl aziridine)	A
HAP	106990	1,3-Butadiene	A
HAP	542756	1,3-Dichloropropene	A
HAP	1120714	1,3-Propane sultone	B
HAPs	55981	1,4-Butanediol dimethanesulphonate	A
HAPs	7644410	1,4-Dichloro-2-butene	A
HAP	106467	1,4-Dichlorobenzene	A
HAP	123911	1,4-Dioxane (1,4-Diethyleneoxide)	A
HAP	540841	2,2,4-Trimethylpentane	C
HAP	1746016	2,3,7,8-TCDD (Dioxin)	A
HAP	95954	2,4,5-Trichlorophenol	C
HAP	88062	2,4,6-Trichlorophenol	A
HAP	94757	2,4-D, salts and esters (2,4-Dichlorophenoxyacetic acid)	A
HAP	51285	2,4-Dinitrophenol	A
HAP	121142	2,4-Dinitrotoluene	A
HAP	95807	2,4-Toluene diamine	B
HAP	584849	2,4-Toluene diisocyanate	A
	91087	2,6-Toluene diisocyanate	A
HAP	53963	2-Acetylaminofluorene	C
HAPs	132274	2-Biphenylol sodium salt	B
HAP	532274	2-Chloroacetophenone	A

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAP	79469	2-Nitropropane	A
HAPs	60153493	3-(N-Nitrosomethylamine) (Propionitrile)	B
HAP	91941	3,3-Dichlorobenzidine	A
HAP	119904	3,3-Dimethoxybenzidine	A
HAP	119937	3,3'-Dimethyl benzidine	A
HAP	101144	4,4-Methylene bis (2-chloroaniline)	A
HAP	101779	4,4-Methylenedianiline	A
HAP	534521	4,6-Dinitro o-cresol, and salts	A
HAP	92671	4-Aminobiphenyl	A
HAP	92933	4-Nitrobiphenyl	C
HAP	100027	4-Nitrophenol	C
HAP	75070	Acetaldehyde	A
HAP	60355	Acetamide	B
HAP	75058	Acetonitrile	A
HAP	98862	Acetophenone	C
HAP	107028	Acrolein	A
HAP	79061	Acrylamide	A
HAP	79107	Acrylic acid	A
HAP	107131	Acrylonitrile	A
	814686	Acrylyl chloride	C
HAPs	1402682	Aflatoxins	A
	116063	Aldicarb (Temik)	A
HAPs	309002	Aldrin	A
	107186	Allyl alcohol	A
HAP	107051	Allyl chloride	A
	20859738	Aluminum phosphide	A
	54626	Aminopterin	C
	78535	Amiton	C
	3734972	Amiton oxalate	C
	7664417	Ammonia	B
HAP	62533	Aniline	A
	88051	Aniline,2,4,6-Trimethyl	C
HAP	0	Antimony compounds	A
	1397940	Antimycin A	C
	86884	ANTU (alpha-naphthylthiourea)	A
HAP	0	Arsenic compounds	A
HAP	1332214	Asbestos	A
HAP	71432	Benzene	A

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAP	92875	Benzidine (p-Diamino diphenyl)	A
HAP	98077	Benzotrichloride	A
HAP	100447	Benzyl chloride, (Chloromethyl)benzene	A
HAP	0	Beryllium compounds	A
HAP	92524	Biphenyl	C
HAP	117817	Bis(2-ethylhexyl) phthalate (DEHP) (Diocetyl phthalate)	A
	534076	Bis(chloromethyl)ketone	C
HAP	542881	Bischloromethyl ether	A
	10294345	Boron trichloride	C
	7726956	Bromine	A
	28772567	Bromodiolone	C
HAP	75252	Bromoform	A
HAP	0	Cadmium compounds	A
HAP	156627	Calcium cyanamide	A
HAP	133062	Captan	A
HAP	63252	Carbaryl	C
	1563662	Carbofuran	A
HAP	75150	Carbon disulfide	A
HAP	56235	Carbon tetrachloride	A
HAP	463581	Carbonyl sulfide	C
	786196	Carbophenothion	C
HAP	120809	Catechol	A
HAP	133904	Chloramben (3-amino-2,5-dichloro benzoic acid)	A
HAP	57749	Chlordane	A
HAPs	115286	Chlorendic acid	B
	470906	Chlorfenvinfos	C
HAPs	108171262	Chlorinated paraffins (C12, 60% chlorine)	B
HAP	7782505	Chlorine	A
	24934916	Chlormephos	C
HAP	79118	Chloroacetic acid	A
HAP	108907	Chlorobenzene	A
HAP	510156	Chlorobenzilate (ethyl-4,4'-dichlorobenzilate)	B
	107073	Chloroethanol	A
HAP	67663	Chloroform (Trichloromethane)	A
HAP	107302	Chloromethyl methyl ether	A
	3691358	Chlorophacinone	C
HAP	126998	Chloroprene (2-Chloro-1,3-butadiene)	A
	1982474	Chloroxuron	C

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
	21923239	Chlorthiophos	C
HAP	0	Chromium compounds (incl. 6+ compounds, etc.)	A
HAPs	117102	Chrysazin (Dorbane)	B
HAPs	2646175	CI Solvent Orange 2	B
HAP	0	Cobalt compounds (as cobalt metal dust and fumes)	A
HAP	0	Coke Oven Emissions	A
	56724	Coumaphos	C
	5836293	Coumatetralyl	C
HAP	1319773	Cresylic acid/Cresols	A
	535897	Crimidine	C
	4170303	Crotonaldehyde	A
	123739	Crotonaldehyde (E)	A
HAP	98828	Cumene	A
HAP	0	Cyanide compounds	A
	675149	Cyanuric fluoride	C
	66819	Cyclohexamide	C
	108918	Cyclohexylamine	C
HAP	3547044	DDE (Dichlorodiphenyldichloroethylene)	A
	8065483	Demeton	A
	919868	Demeton-s-methyl	C
	10311849	Dialifor	C
HAP	334883	Diazomethane	A
HAP	132649	Dibenzofurans	C
	19287457	Diborane	A
HAP	84742	Dibutyl phthalate	C
HAP	111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)	A
	149746	Dichloromethylphenylsilane	C
HAP	62737	Dichlorvos	A
	141662	Dicrotophos	A
HAPs	60571	Dieldrin	A
	1464535	Diepoxybutane	B
HAP	111422	Diethanolamine	A
HAP	64675	Diethyl sulfate	B
	1642542	Diethylchlorophosphate	B
	115264	Dimefox	A
	60515	Dimethoate	A
HAP	60117	Dimethyl aminoazobenzene	B
HAP	79447	Dimethyl carbamoyl chloride	B

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAP	131113	Dimethyl phthalate	C
HAP	77781	Dimethyl sulfate	A
	75183	Dimethyl sulfide (Methyl sulfide)	C
HAP	68122	Dimethylformamide	A
	2524030	Dimethylphosphorochloridothioate	C
	99989	Dimethyl-p-phenylenediamine	C
	644644	Dimetilan	C
	1420071	Dinoterb	C
	78342	Dioxathion	A
	82666	Diphacinone	C
	152169	Diphosphoramidate, octamethyl	A
HAPs	2475458	Disperse Blue 1	B
	298044	Disulfoton	A
	541537	Dithiobiuret	C
	115297	Endosulfan	A
	2778043	Endothion	C
	72208	Endrin	A
HAP	106898	Epichlorohydrin (1-Chloro-2,3-epoxypropane)	A
	563122	Ethion	A
	13194484	Ethoprophos (Ethoprop)	C
HAP	140885	Ethyl acrylate	A
	2642719	Ethyl azinphos	C
HAP	100414	Ethyl benzene (Phenylethane)	C
	538078	Ethyl bis (2-chloroethyl)amine	C
HAP	51796	Ethyl carbamate (Urethane)	B
HAP	75003	Ethyl chloride (Chloroethane)	C
	107153	Ethylene diamine	C
HAP	106934	Ethylene dibromide (1,2-Dibromoethane)	A
HAP	107062	Ethylene dichloride (1,2-Dichloroethane)	A
	371620	Ethylene fluorohydrin	C
HAP	107211	Ethylene glycol	C
HAP	151564	Ethylene imine (Aziridine)	A
HAP	75218	Ethylene oxide	A
HAP	96457	Ethylene thiourea	A
HAP	75343	Ethylidene dichloride (1,1-Dichloroethane)	B
	542905	Ethylthiocyanate	C
	22224926	Fenaminophos (Fenamiphos)	A
	122145	Fenitrothion	C

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
	115902	Fensulfothion	A
HAP	0	Fine mineral fibers	A
	4301502	Fluometil	C
	144490	Fluoroacetic acid	B
	7782414	Fluorine	C
	640197	Fluoroacetamide	C
	359068	Fluoroacetyl chloride	C
	944229	Fonofos	A
HAP	50000	Formaldehyde	A
	23422539	Formotenate hydrochloride	C
	2540821	Formothion	C
	17702577	Formparanate	C
	21548323	Fosthietan	C
	3878191	Fuberidazole	C
	110009	Furan	A
HAP	0	Glycol ethers	A
HAP	76448	Heptachlor	A
HAP	118741	Hexachlorobenzene	A
HAP	87683	Hexachlorobutadiene	A
HAP	77474	Hexachlorocyclopentadiene	A
HAP	67721	Hexachloroethane	A
HAP	822060	Hexamethylene-1,6-diisocyanate	A
	4835114	Hexamethylenediamine, N,N-dibutyl	C
HAP	680319	Hexamethylphosphoramide	B
HAP	110543	Hexane	C
HAP	302012	Hydrazine	A
HAP	7647010	Hydrochloric acid (Hydrogen chloride)	A
HAP	7664393	Hydrogen fluoride (Hydrofluoric acid)	A
	7783064	Hydrogen sulfide	A
HAP	123319	Hydroquinone	C
	297789	Isobenzan	C
	465736	Isodrin	A
	55914	Isofluorophate	B
HAP	78591	Isophorone	A
	4098719	Isophorone diisocyanate	A
	108236	Isopropyl chlorformate	C
	625558	Isopropyl formate	C
	119380	Isopropylmethylpyrazolyl dimethylcarbamate (Isolan)	C

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAPs	64091914	Ketone, 3-pyridyl-3-(N-methyl-N-nitrosoamino) propyl	B
HAP	0	Lead compounds (except elemental lead)	A
	21609905	Leptophos	C
HAP	-	Lindane (all isomers of hexachlorocyclohexane)	A
HAP	108316	Maleic anhydride	C
HAP	0	Manganese compounds	A
HAP	108394	m-Cresol	B
	950107	Mephosfolan	A
HAP	0	Mercury compounds	A
	126987	Methacrylonitrile	A
	10265926	Methamidophos	A
HAP	67561	Methanol (Methyl alcohol)	C
	950378	Methidathion	A
	2032657	Methiocarb	C
	16752775	Methomyl	B
HAP	72435	Methoxychlor	A
	86500	Methyl azinphos	A
HAP	74839	Methyl bromide (Bromomethane)	A
HAP	74873	Methyl chloride (Chloromethane)	A
	79221	Methyl chloroformate	B
	624920	Methyl disulfide	C
HAP	60344	Methyl hydrazine	A
HAP	74884	Methyl iodide (Iodomethane)	A
HAP	108101	Methyl isobutyl ketone (MIBK) (Hexone)	B
HAP	624839	Methyl isocyanate	A
	556616	Methyl isothiocyanate	C
	74931	Methyl mercaptan (Methanethiol)	A
HAP	80626	Methyl methacrylate	C
	3735237	Methyl phenkapton	C
	78944	Methyl vinyl ketone (3-butene-2-one)	C
HAP	75092	Methylene chloride (Dichloromethane)	A
HAP	101688	Methylene diphenyl diisocyanate (MDI)	A
HAPs	78988	Methylglyoxal	B
	7786347	Mevinphos	A
	315184	Mexacarbate	C
HAP	1634044	MTBE (Methyl tertiary butyl ether)	C
	505602	Mustard gas (Dichlorodiethyl sulfide)	A
HAP	108383	m-Xylene	C

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
HAP	121697	N,N-Diethyl aniline (N,N-Dimethylaniline)	A
HAP	91203	Naphthalene	B
HAP	0	Nickel compounds (incl. nickel subsulfide)	A
	54115	Nicotine	A
	7697372	Nitric acid	A
HAPs	-	Nitrilotriacetic acid, Ca-, Na-, K salts	B
HAP	98953	Nitrobenzene	A
	1122607	Nitrocyclohexane	C
HAPs	55185	N-Nitrosodiethylamine	A
HAP	62759	N-Nitrosodimethylamine	A
HAPs	924163	N-Nitroso-di-n-butylamine	A
HAP	59892	N-Nitrosomorpholine	B
HAP	684935	N-nitroso-N-methylurea	B
HAPs	615532	N-nitroso-N-methylurethane	C
	991424	Norbormide	C
HAP	90040	o-Anisidine	A
HAP	95487	o-Cresol	B
HAP	95534	o-Toluidine	A
	23135220	Oxamyl	B
	2497076	Oxydisulfoton	C
HAP	95476	o-Xylene	C
	-	Ozone depleting compounds (CFC, etc.)	C
	1910425	Paraquat	A
	2074502	Paraquat methosulfate	A
HAP	56382	Parathion	A
	298000	Parathion-methyl	A
HAP	106445	p-Cresol	A
HAP	82688	Pentachloronitrobenzene (Quintobenzene)	A
HAP	87865	Pentachlorophenol	A
	79210	Peracetic acid	C
HAP	127184	Perchloroethylene (Tetrachloroethylene)	A
HAP	108952	Phenol	C
	64006	Phenol,3-(1-methylethyl)-methylcarbamate	C
HAPs	122601	Phenyl glyceryl ether (3 phenoxy 1,2 propanediol)	A
	298022	Phorate	A
	947024	Phosfolan	C
HAP	75445	Phosgene	A
	732116	Phosmet	B

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
	13171216	Phosphamidon	C
HAP	7803512	Phosphine	A
HAP	7723140	Phosphorous	A
HAP	85449	Phthalic anhydride	B
	110894	Piperidine	C
	23505411	Pirimifos-ethyl	C
HAP	1336363	Polychlorinated biphenyls (PCBs) (Aroclors)	A
HAP	0	POLYCYCLIC ORGANIC MATTER	A
HAP	106503	p-Phenylenediamine	C
	2631370	Promecarb	C
	106967	Propargyl bromide	C
HAP	57578	Propiolactone, beta	A
HAP	123386	Propionaldehyde	C
HAP	114261	Propoxur (Baygon)	A
HAP	78875	Propylene dichloride (1,2-Dichloropropane)	A
HAP	75569	Propylene oxide	A
HAP	106423	p-Xylene	C
	140761	Pyridine, 2-methyl-5-vinyl	C
	53558251	Pyriminil	C
HAP	91225	Quinoline	A
HAP	106514	Quinone	A
HAP	0	Radionuclides (including radon)	A
	107448	Sarin	B
HAP	0	Selenium compounds	A
	62748	Sodium fluoroacetate	A
	131522	Sodium pentachlorophenate	A
	57249	Strychnine	A
	60413	Strychnine sulfate	C
HAP	100425	Styrene	C
HAP	96093	Styrene oxide	C
	3689245	Sulfotep	A
	7446119	Sulfur trioxide	C
	7664939	Sulfuric acid	B
	77816	Tabun	B
	13494809	Tellurium	A
	107493	TEPP (Tetraethyldithiopyrophosphate)	A
	13071799	Terbufos	A
	509148	Tetranitromethane	A

<u>LIST OF HAPS</u>			
CAS		Toxics	BIN
	-	Thallium compounds	A
	297972	Thionazin (o,o diethyl-0-2-pyridinylphosphorothioate)	C
	108985	Thiophenol (Phenyl mercaptan)	A
	79196	Thiosemicarbazide	C
HAP	7550450	Titanium tetrachloride	C
HAP	108883	Toluene	C
HAP	8001352	Toxaphene (Camphechlor)	A
	110576	TRANS 1,4-DICHLOROBUTENE	B
HAP	79016	Trichloroethylene (TCE)	C
HAP	121448	Triethylamine	A
HAP	1582098	Trifluralin	A
	555771	Tris(2-chloroethyl)amine	C
	2001958	Valinomycin	C
HAP	108054	Vinyl acetate	C
HAP	593602	Vinyl bromide	A
HAP	75014	Vinyl chloride	A
	81812	Warfarin	A
	129066	Warfarin sodium	A
HAP	1330207	Xylene (and mixed isomers)	C
	28347139	Xylylene dichloride	C
	1314847	Zinc phosphide	A

COLORADO OZONE NON-ATTAINMENT OR ATTAINMENT MAINTENANCE AREAS

I. CHRONOLOGY OF ATTAINMENT STATUS

Denver Metropolitan Area Only

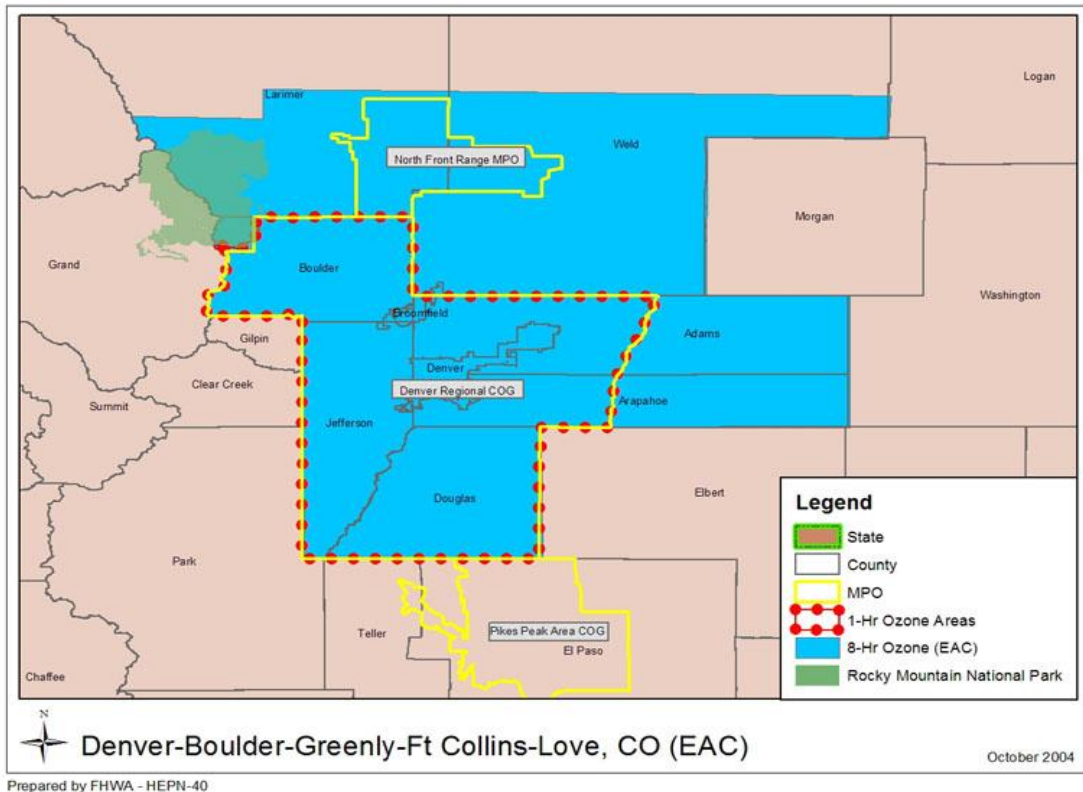
DATE 1977	DENVER 1-HOUR OZONE NON-ATTAINMENT AREA DESIGNATION FIRST BECOMES EFFECTIVE IN 7-COUNTY DENVER METROPOLITAN AREA
10/11/01	DENVER 1-HOUR OZONE ATTAINMENT MAINTENANCE AREA DESIGNATION REPLACES NON-ATTAINMENT DESIGNATION AND BECOMES EFFECTIVE IN 7-COUNTY DENVER METROPOLITAN AREA
9/2/05	1-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD IS REVOKED IN COLORADO EXCEPT FOR THE DENVER 1-HOUR OZONE ATTAINMENT MAINTENANCE AREA.

Denver Metropolitan Area and North Front Range

10/11/01	1-HOUR ATTAINMENT MAINTENANCE AREA REPLACES NON-ATTAINMENT DESIGNATION FOR THE DENVER METRO AREA/NORTH FRONT RANGE AREA.
4/15/04	EPA DESIGNATES THE DENVER METRO AREA/NORTH FRONT RANGE REGION AS AN 8-HOUR OZONE NON-ATTAINMENT AREA, DESIGNATION DEFERRED DUE TO THE IMPLEMENTATION OF THE EARLY ACTION COMPACT (EAC).
11/20/07	DENVER 8-HOUR OZONE NON-ATTAINMENT DESIGNATION BECOMES EFFECTIVE IN 9 COUNTY DENVER METROPOLITAN AREA.
2010+	POSSIBLE EXPANSION OF DENVER 8-HOUR OZONE NON-ATTAINMENT AREA (8-HOUR OZONE EAC) DUE TO CHANGES IN THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS).

II. MAPS

Denver Metropolitan Area and North Front Range



Appendix E

OSHA PROGRAMS RECORDKEEPING REQUIREMENTS SUMMARY

- 1. Hazardous Communication(HAZCOM)/Employee Right to Know (RTK)**
 - a. Documentation Requirements;
 - 1) Written Program
 - 2) Chemical List
 - 3) Current MSDS
 - 4) Training Program
 - b. Records
 - 1) Sign-in-sheets
 - 2) Tests, signed certificates
 - 3) Old MSDS sheets (keep for 30 years)
- 2. Personal Protective Equipment (PPE)**
 - a. Documentation Requirements;
 - 1) Written Program
 - 2) Training Program
 - 3) Written Assessments
 - b. Records;
 - 1) Written assessments
 - 2) Sign-in-sheets
 - 3) Tests, signed certifications
 - 4) Annual review of program
- 3. Lock-out/Tag-out (LO/TO)**
 - a. Documentation Requirements;
 - 1) Written Program
 - 2) Written procedures specific to machines
 - 3) Training Program per Authorized, Affected and Other employees
 - b. Records;
 - 1) Written procedures/energy hazard assessments specific to machines that require them
 - 2) Sign-in-sheets
 - 3) Tests, signed certificates
 - 4) Annual Review of written program and procedures
 - 5) Maintenance Logs indicating that LO/TO was performed **HIGHLY RECOMMENDED!**
- 4. Fire Prevention (more than 10 employees)**
 - a. Documentation Requirements;
 - 1) Written Program
 - 2) Training Program
 - 3) Evacuation Procedures
 - 4) Site Plan (if necessary)
 - b. Records;
 - 1) Sign-in-sheets
 - 2) Tests, signed certificates
 - 3) Record of annual fire extinguisher training NOTE: This can be done by Fire Department or your company's Fire Extinguisher servicing company.
 - 4) Record of evacuation training i.e. fire drills
 - 5) Monthly fire extinguisher check (i.e. checking for sign over top, accessibility, charged and mounted.)
- 5. Fire Prevention (10 or less employees)**
 - a. Documentation Requirements;
 - 1) None, however highly recommend that your company have one in order to prove 'good faith' efforts.
 - b. Records;

- 1) Record of informing employees of emergency procedures and fire prevention guidelines
- 2) Record of annual fire extinguisher training. NOTE: This can be done by Fire Department or your company's Fire Extinguisher servicing company.
- 3) Monthly fire extinguisher checks (e.g., checking for sign over top, accessibility, charged and mounted.)
- 6. Forklift Operator (Training done every 3 years)**
 - a. Documentation Requirements;
 - 1) Written Program not required however HIGHLY RECOMMENDED!
 - 2) Daily Maintenance checklists
 - 3) Operator's Manual
 - 4) Data Plate on forklift
 - b. Records;
 - 1) Record of Classroom and Operational training (i.e. Driving test)
 - 2) Sign-in-sheets
 - 3) Tests, both classroom and operational training certificates
 - 4) Daily checklists (filled in, thereby proving that it is done)
- 7. Respiratory Protection**
 - a. Documentation Requirements;
 - 1) Written Program
 - 2) Training Program
 - b. Records;
 - 1) Medical records of annual physical
 - 2) Training records i.e. fit-testing, maintenance procedures etc.
 - 3) Records of equipment maintenance i.e. cartridges changed periodically
- 8. Hearing Conservation (required if employees exposed to 85 dba/TWA)**
 - a. Documentation Requirements;
 - 1) Written Program
 - b. Records;
 - 1) Medical Records of hearing tests including baseline reports (Annual)
 - 2) Training records of how employees should utilize hearing protection
 - 3) Dosimeter sound-level readings
- 9. Injury and Illness Prevention/Accident Prevention (not a federally required program therefore only certain states have this requirement i.e. Washington, Oregon, Nevada, California) - Recommended in Colorado**
 - a. Documentation Requirements;
 - 1) Written Program including (but not limited to);
 - a) Company Safety Policy
 - b) Code of Safe Practices
 - c) Disciplinary Policies
 - d) Safety Committee guidelines
 - b. Records;
 - 1) Written hazard assessments
 - 2) Training records i.e. tests, signed certificates
 - 3) Sign-in-sheets
 - 4) Safety Committee Meeting Minutes
- 10. OSHA 300 Forms. Maintaining OSHA Forms 300, 300A, 301 (for companies with 10 or more employees)**
 - a. Documentation Requirements;
 - 1) **OSHA 300 Forms** (Have at least 5 years worth on hand)
 - a) **300 Form:** Filled out completely as 'recordable-cases' occur.
 - b) **300A Form:** Filled out completely totaling a given year's recordable injuries/illnesses i.e. Year 2006 injuries to be totaled and posted by February 1, 2007 until April 30, 2007
 - c) **301 Form:** For each entry on the '300-Form' there should be a corresponding 301 form filled out. EXCEPTION: If you have already filled out an Insurance-Claim Form with the same information required on the 301 Form then you can use that form instead.
 - b. Records (maintain for 5 years).

OSHA Departmental Compliance Checklist

A more compact OSHA Checklist for departmental supervisors or managers to audit their respective areas.

- Have my employees been trained in the following areas?
 - Right to Know (RTK)
 - Personal Protective Equipment (PPE)
 - Injury and Illness Prevention Plan (IIPP) or Accident Prevention (CA, WA, OR, NV only), recommended in Colorado
 - Lock-out/Tag-out (LO/TO)
 - Forklift training
 - Fire Prevention
 - Fire Extinguisher
 - Evacuation Training
 - Other
- Is the use of PPE enforced?
- Is proper PPE available?
- Are my employees obeying the Code of Safe Practices?
- Are my employees or contractors implementing LO/TO?
- Are my employees familiar with our evacuation procedures?
- Are my employees familiar with our spill response procedures per our emergency response plan (or the Business Plan in California)?
- Are my employees familiar with how to report any injuries or illnesses they may have?
- Are the containers in my area (especially secondary containers) properly labeled i.e. Manufacturer's Name, Common or Product Name, Appropriate Hazard Warning?
- Are the Exits in my area unblocked and accessible?
- Are the fire extinguishers in my area charged, accessible and checked monthly?
- Are my eyewashes functioning properly and tested no less than monthly?
- Are the first aid kits in my area stocked i.e. materials not expired, kit clean and sanitary?
- Are the aisles in my department at least 24" wide and not blocked?
- Are possible trip hazards in my area eliminated i.e. cords, pallets, trash etc.?
- Is my department clean i.e. free of trash, debris, chemicals on floor etc.? Also, pallets laid flat?
- Is there any unauthorized use of extension cords i.e. used on a permanent basis?
- Are ladders in my area secured? (Especially 8 foot or taller?)
- Are my employees handling flammable properly i.e. grounding, no smoking etc.?
- Are propane tanks in my area secured?
- Are all electrical panels or cut-off switches accessible i.e. at least 36" clearance in front of them?
- Are my employees lifting properly i.e. lifting with legs and not back?
- Are rag containers closed?
- In pre-press is silver-recovery unit functioning properly?
- Are any Hazardous Waste Containers in my area leaking or unlabeled?

For more detailed information on OSHA Compliance for your small business, refer to:

OSHA Handbook for Small Businesses at www.osha.gov/Publications/smallbusiness/small-business.pdf

OSHA's Compliance Assistance Quick Start at
www.osha.gov/dcspl/compliance_assistance/quickstarts/general_industry/index_gi.html.

Appendix F

RESOURCES

State and Local Contacts

Small Business Assistance Program (SBAP)
(303) 692-3175 and (303) 692-3148
www.cdphe.state.co.us/ap/sbap/index.html

Small Business Ombudsman (SBO)
(303) 692-2135
www.cdphe.state.co.us/el/sbo/sbomain.html

Generator Assistance Program (GAP)
(303) 692-3307
www.cdphe.state.co.us/hm/gap/index.htm

Hazardous Material and Waste Management
Division (HMWMD)
Technical Assistance Line
(303) 692-3320 or toll-free (888) 569-1831
Ext. 3320
Division General Number: (303) 692-3300
www.cdphe.state.co.us/hm/index.htm

Spill Release Reporting
Hazardous Material and Waste Management
Division
www.cdphe.state.co.us/hm/spillsandreleases.htm

Local Health Departments
http://healthguideusa.org/colorado_county_health_departments.htm

OSHA Contacts

OSHA Consultation Program, Colorado State University
(970) 491-6151
www.bernardino.colostate.edu
e-mail: ohss@lamar.colostate.edu

OSHA's Safety & Health Achievement Recognition
Program (SHARP)
www.osha.gov/dcsp/smallbusiness/sharp.html

Other Contacts

(Contributed to the information in this workbook)

Printing & Imaging Association Mountain States
(303) 771-1578
www.piams.org

Sustainability/P2 Program
(303) 692-2186
www.cdphe.state.co.us/oeis/index.html

Environmental Leadership Program
(303) 692-3477
www.cdphe.state.co.us/oeis/elp/index.html

Water Quality Control Division (WQCD)
Pretreatment Program
(303) 692-3618

Stormwater Permits Unit (WQCD)
(303) 692-3500
www.cdphe.state.co.us/wq/index.html

Air Pollution Control Division (APCD)
(303) 692-3100
www.cdphe.state.co.us/ap/index.html

Local Fire Departments
<http://dfs.state.co.us/FireDeptInfo.htm>

OSHA
www.osha.gov

Assured Compliance Solutions, Inc.
(480) 829-9051 or (800) 280-5415
www.complianceanswers.com

RESOURCES

U.S. EPA Online Library

www.epa.gov/natlibra/ols.htm

TRI Guide for Printing and Publishing

www.epa.gov/tri/guide_docs/

EPA Compliance Assistance Centers

www.epa.gov/compliance/assistance/sectors/

EPA's Design for the Environment (DfE) Publications

www.epa.gov/dfe/pubs

Pacific Northwest Pollution Prevention Resource
Center Website

www.pprc.org/

Hazardous Chemical Database

<http://ull.chemistry.uakron.edu/erd/>

TRI Guidance

www.epa.gov/tri/guide_docs/

P2 and Environmental Assistance
North Carolina

www.p2pays.org

Sustainability Programs

www.co.boulder.co.us/sustain/

www.cdphe.state.co.us/oeis/index.html

Oxford MSDS Database

<http://physchem.ox.ac.uk:80/MSDS>

Climate Change Tools

Carbon Trust International

www.carbontrust.com

Greenbiz.com

www.greenbiz.com/browse/small-business

EPA Climate Leaders

www.epa.gov/stateply/resources/lowemitters.html

Greenhouse Gas Equivalency Calculator

www.epa.gov/cleanenergy/energy-resources/calculator.html

EPA Climate Change Tools

www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

Peaks to Prairies

www.peakstoprairies.org

Energy IQ

<http://energyiq.lbl.gov/benchmark.html>

Coolcalifornia.org

<http://coolcalifornia.org>

Carbonfootprint.com

www.carbonfootprint.com

NOTES

The Small Business Compliance Certification Workbook
was developed by the
Colorado Department of Public Health & Environment
Small Business Assistance Program in Cooperation with the
Printing & Imaging Association Mountain States
January 2010

