COMPLIANCE ASSISTANCE PROGRAM

SPOKANE COUNTY AIR POLLUTION CONTROL AUTHORITY

SCAPCA

Surface Coating of Metal, Plastic, and Wood

A Guide To Reducing Air Pollution & Saving Money In Spokane County

What's Inside

- What Businesses are Affected by the Surface Coating Regulations
- How to Avoid Penalties
- What you Need to Know About VOC
- Self-Inspection Checklist

Use this booklet to help assure that your business is meeting air quality laws, and to train your employees. The Air Quality Compliance Self-Inspection Checklist at the back of this book will help you stay in compliance with SCAPCA requirements.

Why Did SCAPCA Produce This Booklet?

The Spokane County Air Pollution Control Authority (SCAPCA) is committed to helping local businesses understand air quality regulations and thereby stay in compliance. The intent of this booklet is to help you understand SCAPCA's requirements as they apply to coating of metal, plastic, wood, and auto bodies. (See SCAPCA Regulation I, Section 6.13.)

The following information will help you understand how you can improve your working conditions, keep your customers and neighbors satisfied, comply with the law, avoid penalties, and reduce air pollution.

As many businesses have discovered, self-inspections can even help you save money.

At the back of this booklet is a form that will help you conduct a self-inspection and better understand if your operations are in compliance with the air quality regulations.

How Does SCAPCA's Surface Coating Regulation Apply To Me?

SCAPCA's surface coating regulation applies to all commercial and industrial facilities that use surface coatings, solvents, and other agents. It does not apply if you are painting for personal noncommercial purposes and using less than five gallons of coatings per year, or if you are painting architectural surfaces, like a home or other stationary structures.

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Why Should My Business Try To Reduce Air Pollution?

Emissions from surface coating operations include VOCs (volatile organic compounds), toxic air pollutants and particulate matter. These emissions come primarily from solvents evaporating from paint, overspray, cleanup and storage. In the presence of sunlight, VOCs participate in a complex reaction with oxides of nitrogen in the air to produce ozone. Ozone is a strong irritant that attacks the lungs, makes breathing difficult, may cause your eyes to water, and is the major ingredient in photochemical smog. Prolonged exposure can cause permanent lung damage.

The surface coating regulations are designed to reduce particulate emissions, reduce public exposure to toxics, prevent atmospheric ozone formation and encourage pollution prevention. In addition, reducing the amount of VOC in coatings can reduce the exposure of your workers to organic solvents and decrease your waste disposal costs.

The surface coating regulations reduce the amount of particulates and VOCs that are emitted into our air, as shown in the example below.

Example
Shop A and Shop B both use the same type of paint. Both shops need to apply 150 gallons of paint to their products. Shop A uses conventional paint guns and no filters. Shop B uses HVLP paint guns and paint arrestor filters. The amount of paint used by each shop to apply 150 gallons to the parts and the subsequent emissions are given in the following table:

	Shop A	**Shop B**
Paint Gun Type	conventional paint guns	HVLP paint guns
Transfer Efficiency	35%	65%
Filtration	no filters used	arrestor filters used
Paint Applied Per Year	150 gal/year	150 gal/year
Paint Used Per Year	**429 gal/year**	**231 gal/year**
VOC Emissions	**2314 lbs VOC/year**	**1246 lbs VOC/year**
Particulate Emissions	**1543 lbs Part./year**	**25 lbs Part./year**

As you can see, the use of HVLP guns and filters significantly reduces emissions. Shop B emits 46% less VOCs and 98% less particulate than Shop A. In addition, Shop A had to purchase almost 200 more gallons than Shop B to apply the same amount of paint to the parts. Increased efficiency reduces the amount of paint your company has to buy and may decrease your hazardous waste disposal costs.

What Businesses are Affected by the Surface Coating Regulations?

SCAPCA has over 225 businesses registered that apply surface coating to metal, plastic, wood, and auto bodies. They include: ***Auto Body Shops, Metal Fabricators, Wood Working Shops, Boat Building Facilities, Plastic Parts & Composite Structure Manufacturers.***

How Do I Comply with SCAPCA Regulations and Avoid Penalties?

Surface coating operations must follow SCAPCA's Notice of Construction and Registration requirements. Please refer to SCAPCA's info sheets on these requirements and SCAPCA Regulation I and II.

Remember, your entire facility is subject to the surface coating requirements. ***There are a few basic things you need to know and do to help your company stay in compliance and protect Spokane's air quality:***

- Keep accurate records of coating and clean-up materials purchased, used and disposed of during the last 24 months on site.
- Store coating products and waste materials in closed (tightly sealed) containers.
- Clean up spills promptly.
- Enclose and control emissions with the use of an approved booth and control system.
- Use acceptable application methods: HVLP, LVLP, electrostatic, brush coat, dip coat, flow coat, roll coat, or pre-package aerosol (airless and air assisted airless may be used in some situations).
- Use an enclosed gun cleaner.
- Make sure light duty vehicle coatings meet VOC content limits.
- Make sure your stack allows for upward flow without obstruction at point of discharge, i.e., no china cap or elbow.
- Maintain your equipment.
- Keep a log of paint booth maintenance activity and filter changes.
- Increase your coating transfer efficiency by training personnel in the proper use of equipment.
- Use filters designed for use in spray paint operations.
- Make sure there are no gaps or openings between filters and ductwork.
- Do not use coatings containing lead and chromates greater than 0.1% by weight, unless you obtain an exemption from SCAPCA.

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What Does SCAPCA Look for During a Facility Inspection?

Periodically, a SCAPCA inspector will conduct an inspection of your facility. Your coating operations will be examined to verify compliance with SCAPCA's surface coating rules.

The inspector will review:

- Notice of Construction conditions of approval (if applicable)
- Types of coatings used and products coated
- Types of solvents used to thin coatings
- Weekly/monthly coating and solvent purchase records
- VOC content (for auto body coating) and Material Safety Data Sheets (MSDS)
- Maintenance logs, including filter change dates
- Waste disposal manifests

The inspector will examine:

- Application equipment operation
- Spray booth and filter condition/fit
- Surface preparation techniques and controls
- Clean-up procedures
- Coatings and solvents storage
- Waste storage
- Ducting behind filters
- Pressure drop gauges (when present)

How Do I Make Sure My Coatings Comply with SCAPCA's Regulations?

Many coatings are available to meet the specific SCAPCA requirements. Coating technology continues to develop and new materials are being incorporated into innovative coating systems to meet industry's changing needs. Application equipment is also being designed and improved to apply the new coatings at greater efficiencies. It's a good idea to maintain contact with several manufacturers of coatings and application equipment to make sure you have a system that works best for your operation. Cost savings for you may include improved coating quality, lower quantities of coatings purchased and applied, and reduced waste disposal costs. In addition, Spokane's local air quality benefits from reduced VOC and toxic emissions.

You may want to contact the Department of Ecology's pollution prevention staff at (509) 456-2926 for assistance in choosing materials that are more environmentally friendly.

What Do I Need to Know About VOC Content?

Coatings consist of solids (resin, pigments, extenders, additives) and solvents. Solvents lower the viscosity (reduce or thin), and act as the carrier for the solids. Solvents also are used to dissolve the solid resin. Solvents evaporate from the coating before, during and after application. Solvents include VOCs, water, and exempt solvents. VOC content means pounds of VOCs per gallon of coating (lb/gal) or grams of VOCs per liter of coating (G/L), minus water and exempt solvents (exempt solvents do not contain volatile organic compounds).

The VOC concentration does not change if you increase the volume of mixed paint used, however, the VOC concentration does increase when adding VOC solvents (most thinners and reducers).

Manufacturers are currently being required by federal regulations to formulate paint to certain VOC specifications, that when used, according to the manufacturer's recommendations, will meet VOC content limits. The VOC content is generally stated on the label or on the manufacturer's paint specification sheet. ***If you coat light duty vehicles, VOC compliant coatings must be used.*** The limits are found in SCAPCA's general surface coating regulation.

What Types of Coatings Are Available?

Traditionally, metal, plastic, and wood coatings contained solvents with high levels of VOCs. Today there are many kinds of alternatives available that have low VOCs and reduce VOC and toxic air emissions. Some of the preferred types of coatings include:

Water Borne - Water is the major solvent and includes water reducible and emulsions. These coatings usually include VOCs as co-solvents.

High Solids - Coatings that contain greater than normal resin and pigment (70 - 80% by volume).

UV Curable Coating - Liquid resin and pigment which uses UV light to cure the coating.

Powder - Dry finely ground coating which is usually sprayed dry on an electrically charged surface and is later heated to its melting point so that the powder can flow together (3% VOCs by volume).

Exempt Solvent based - Coatings that contain exempt solvents, primarily 1,1,1 TCA. These coatings usually include VOC as stabilizers and co-solvents.

Electrodeposition - Dip coating process where water borne coatings are electrically "plated-out".

Autodeposition - Dipcoat plating process without electrical charge.

Catalyzed Coatings - Two or three component coatings which are mixed together prior to application.

Other coating systems may be available and all systems have advantages and disadvantages. Be sure to consider worker safety, respiratory protection, waste disposal, surface and equipment compatibility, fire requirements, odor releases, and emissions of potentially toxic materials when deciding on a coating system. Remember, keep the solids content in mind when comparing the costs of your coatings. Contact your suppliers for additional information.

What Transfer Methods Can I Use?

SCAPCA regulations require that coatings and agents containing more than 2.1 lb/gal or 250 grams/liter VOC be applied using any of the following high transfer efficiency methods:

- High-Volume, Low-Pressure coating system
- Low-Volume, Low Pressure coating system
- Electrostatic application
- Flow coat application
- Dip coat application
- Brush coat application
- Pre-packaged aerosol can application
- Roll coat application
- Airless or air assisted airless under prescribed circumstances
- Other applications that have received prior written approval from SCAPCA
- Spraying techniques with transfer efficiencies of at least 65%

How Should I Maintain My Spray Booth Filters?

Spray booth filters prevent paint overspray from traveling up the exhaust vent. Filters help increase the life span of the exhaust fans, reduce fire hazard, and provide protection from the deposition of paint particles outside the building. It is important to maintain your booth to ensure that your operation does not cause a public nuisance and violate SCAPCA regulations. Paint overspray can travel through gaps/openings between filters and ductwork, or through ineffective filters and damage the finish of automobiles and structures near your operation. Always make sure that the filters are designed to capture paint overspray and installed properly, covering all openings.

Check Your Spray Booth Filter Pressure

A pressure drop gauge (manometer or magnehelic) may be used to determine the pressure drop across the spray booth filters. As the filter pores become clogged, the pressure drop increases. To be effective, filters should be replaced according to manufacturers recommendations. Check your pressure gauge frequently for accuracy and, if it is a manometer, maintain its fluid level.

Keep Your Curtain Wet

Waterwash booths should provide a continuous sheet of water down the face of the rear booth panel. The water sheeting collects the overspray from the painting operation and the particulates can be skimmed from the surface of the water for disposal. If the booth does not provide a continuous sheet of water, i.e. if dry spots appear, the water spray lines should be checked for clogged openings. Remove the booth from service and repair the water lines immediately.

Be sure to check and maintain the chemicals and additives in the water. Be aware that the City and County wastewater utilities and the State Department of Ecology may have additional requirements. These agencies are listed in the resource section at the end of this guide. Never discharge your wastewater to the ground or storm drain system.

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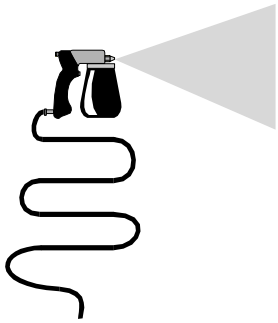
What About Transfer Efficiency and Compliant Application Methods?



Transfer efficiency is the percentage of paint solids deposited on the surface of your product. The cost savings in paint consumption when using high transfer efficiency guns is significant. If you achieve 30% transfer efficiency, then 30% of the paint solids sprayed have adhered to the product, and 70% of the paint solids are on your floor, booth walls, and exhaust filters. ***You can get more paint to stay on the product if you use application methods with transfer efficiencies in excess of 65%, and you buy less paint.***

Wasting Paint is a Waste of Money

High transfer efficiency saves paint and decreases emissions, thus lowering your costs. High transfer efficiency decreases your booth filter purchases, decreases your booth cleaning expenses, and may decrease your waste disposal costs. Train your painters to maximize their efficiency. Consider racking parts to make overspray land on a part. Make sure automatic spray lines spray the parts and not empty hooks. Spray corners of parts first so overspray hits uncoated areas of the part.

Maintain and Operate Your Equipment Properly

Transfer efficiency is dependent upon many factors which include proper operation and maintenance of the coating equipment, size and shape of the part, type of coating, ambient temperature, humidity, and operator training and error. You can take these steps to increase your efficiency:

- Use properly designed equipment
- Eliminate cross drafts
- Reduce air pressure in gun
- Allow dipped parts to drain
- Only spray the part
- For electrostatic painting
  - turn on power to electrostatic
  - keep a good clean ground
  - hook up the grounding strap

Contact your equipment supplier for more information on how to improve your transfer efficiency. Even if you are not required to increase your transfer efficiency, you should check into it -- ***it can save you money.***

How Should I Store My Solvents and Coatings?

Tightly seal all containers of coatings and solvents. Cans and drums should be equipped with tight fitting lids and should remain closed between uses to prevent evaporation. Large drums should have screw caps to cover the bung holes and should be opened only to empty or fill the drum. Use a pump or funnel when filling and make sure to close the drum completely when you are finished. Look for the new funnels that screw into the bung of drums and have a lid that clamps down on top of the funnel for a tight seal.

Store waste solvents in tightly sealed containers. Make sure the bung holes in waste solvent drums are closed and lids on buckets are securely locked down. All solvent laden rags and cloths including those used to clean parts and spray equipment should be stored in closed fireproof containers. Store and dispose of materials in accordance with local fire department, solid waste, and State Department of Ecology requirements.

How Should I Clean My Surface Coating Equipment?

VOCs from your facility can be reduced significantly by cleaning your spray guns and other equipment properly. Never clean your lines by spraying solvents into the air or into the filters. Purging your lines in this manner wastes your cleanup solvent and is a violation of SCAPCA regulations. Always direct the clean-up solvents, using minimal pressure, into containers to prevent evaporation. Remove atomization tips, soak and/or use a brush to clean the tip, then flush solvent through the gun (without the tip) into a container which is immediately sealed. Soak spray guns in closed containers and avoid the use of VOCs for clean-up whenever possible.

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Are There New Surface Preparation Techniques I Should Know About?

Instead of using solvents, investigate the use of abrasives, water with surfactants, alkaline washes, or acid etches for surface preparation in your operation. Many businesses have found that switching from solvent cleaners to other surface preparation methods can save money and reduce disposal costs. Be sure to request a copy of SCAPCA's information sheet – Understanding Solvent Cleaning and Air Quality.

What Kind of Records and Logs Should I Maintain?

Keep Current Logs

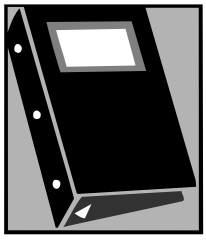
Keep detailed records of the coatings applied at your facility. Monthly logs should detail the products purchased, including the name and number of the product, and the amount of product purchased, with the appropriate unit indicated (i.e., gallon, quart, pint). Remember that SCAPCA inspectors look for accurate records.

One proven method of recordkeeping involves the use of 'job tickets' and a summary log. Many facilities instruct the operator to record coating information for each job on a production ticket at the booth. The 'job tickets' are then summarized nightly by the supervisor. SCAPCA rules require that the coating records be retained by the operator for two years. Job tickets and coating logs should be stored for this purpose.

Know What Your Records Say

Accurate recordkeeping helps to ensure that you operate in daily compliance. Daily recordkeeping has several other advantages as well. Your records tell you how much paint you use each day. You will have an accurate record of production expenses which can enable you to cut costs.

Your approved Notice of Construction may include a limitation on annual coating usage. Do not paint more than you are allowed. Modify your production schedule to avoid penalties. Be careful with multiple shifts. If you cannot modify your daily production, contact SCAPCA.



What If A Specification Requires A Different VOC Content?

Never accept a contract which requires that you use coatings which do not comply with SCAPCA's VOC, lead and hexavalent chromium requirements. You can be held liable for each day that you apply non-compliant coatings. When you see that a contract requires you to use an unapproved coating, ask the company to change the terms of the contract, or contact SCAPCA to find out if an exemption for that material can be obtained.

Where Should I Display My SCAPCA Notice of Construction Approval?

Place your Notice of Construction Approval, including the specific conditions which must be met by the operator, in a visible place whenever possible. Make sure that you follow the conditions outlined on your Approval. It is important that the operators understand all of the requirements. Many operators provide plastic covers for the Approvals to protect them from damage, and incorporate the SCAPCA conditions required of the facility into their employee training.

What Happens If I Violate SCAPCA's Regulations?

Violating the law is costly. Penalties for violating air pollution regulations can be up to $10,000 per day, per violation. Remember, the benefits of reducing your VOCs and particulate emissions are not simply avoiding penalties...but also providing a safer work place, a healthier environment and greater profits. Experience tells us that the best way to comply with air pollution regulations is to find out what is required and comply with those requirements.

How Will A Self-Inspection Checklist Help Me?

A self-inspection checklist is a good way to protect yourself from non-compliance. An example of a checklist is provided at the end of this booklet, but you may want to come up with a specific checklist for your operation. The information contained in the handbook and checklist covers the basic requirements you need to know, and will help you prepare for your periodic air pollution control inspections.

Contact your SCAPCA inspector if you have questions about your operation. Make sure everyone mixing and applying your coatings, or cleaning up after your coating operation, understands and follows all of the requirements. The best way to comply with air regulations is to know the requirements, keep up with technology, and inspect your operation daily.

What Other Agencies Regulate Surface Coating?

Some of the other agencies that regulate surface coating include:

- **City of Spokane Fire Department**, call 625-7000 for the inspector in your area.
- **Spokane County Fire Districts**, check the phone book for the district in your area.
- **Spokane County Division of Building and Planning**, call 477-3675 for information.
- **Washington Department of Labor and Industries**, call 324-2600 for information.
- **Washington Department of Ecology**, call 456-2926 for information.

Your operations are likely regulated by additional agencies. Refer to SCAPCA's information sheet – Common Environmental Permits Required in Spokane County.

SCAPCA Air Quality Compliance Self-Inspection Checklist

The self-inspection checklist on the next page is provided by the Spokane County Air Pollution Control Authority (SCAPCA) to help Spokane County businesses better understand air quality compliance requirements. However, the checklist is generic and each business may need to expand or adjust the checklist based upon individual operations. Businesses should not assume that the checklist is exhaustive, and should not rely on the checklist for compliance. It is the business's responsibility to fully comply with all environmental laws. If there is a conflict between the checklist and SCAPCA regulations, the regulations will govern. Please remember that periodic completion of the checklist is not a substitute for ongoing compliance.

SCAPCA Air Quality Compliance Self-Inspection Checklist

Date of Self-Inspection:				Inspector:			
	Yes	No	N/A		Yes	No	N/A
1. If your facility coats light duty automobiles, do the coatings used have the appropriate/compliant VOC levels?				11. Are the most current MSDS kept for materials used, and are they available upon request?			
2. Does your facility only apply coatings with less than 0.1% lead and hexavalent chromium?				12. Are records of purchases/usages and waste disposal kept for the previous 24 months of operations and available on site?			
3. If your coatings contain more than 2.1 Lb/Gal or 250 G/L VOC, do you only use approved application methods as outlined in SCAPCA's regulations (i.e., HVLP gun)?				13. Are fugitive emissions from prep work controlled?			
4. Does all surface coating take place in a booth or room equipped with a particulate control system capable of capturing all visible overspray?				14. Are you properly operating your pressure drop gauge (i.e., is it checked to insure that it is zeroed before the booth is turned on)?			
5. Does your paint booth or room exhaust through an unobstructed vertical stack (no caps, elbows, etc.)?				15. Are filters seated in filter housing such that there are no gaps between the filter and the housing?			
6. Is your spray gun totally enclosed during clean-up, or is solvent flushed through the gun into a container which is immediately sealed?				16. If you operate a water wash booth, is the water level maintained to adequately filter exhaust air?			
7. Are all coating and solvent containers tightly sealed when not in use?				17. If you operate a water wash booth, is the water curtain continuous all the way across the booth wall with no flow inconsistencies or gaps?			
8. Are all solvent containing wastes stored in tightly sealed containers until disposal?				18. Are visible emissions and overspray NOT observed from the exhaust stack?			
9. Are solvent rags kept in tightly sealed containers when not in use?				19. Are you performing pressure drop readings, filter changes, visual observations of filter media condition, and other manufacturer-recommended booth maintenance?			
10. Are spills of solvent containing material cleaned up upon discovery?				20. Are all maintenance activities recorded on a maintenance log?			

Note: All answers should be Yes or NA (not applicable). If any answers are No, you should carefully review SCAPCA's regulations to determine if your facility is out of compliance and take the necessary steps to comply.

Development of this document was funded in part from funding provided by the Washington State Department of Ecology.

Spokane County Air Pollution Control Authority
1101 West College Avenue, Suite 403
Spokane, WA 99201
(509) 477-4727
FAX (509) 477-6828
www.scapca.org

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