



Air Emissions Reduction Options

Instructions for Use

This Air Emissions Reduction Options List offers options to consider during an air emissions reduction assessment as required in the SGP criteria in Section 3.2.2.1.3.

Each of the identified practices represents activities that have been implemented by printing operations to reduce a facility's emissions of VOCs. The list consists of several sections, each with a series of emission reduction practices. The SGP program recognizes that not all input materials are used by all print platforms, and thus reduction opportunities differ.

This list can be used to document options that were considered and implemented to reduce air emissions. A facility can choose the options that are applicable to their operations and represent the greatest opportunity for emissions reductions. The items listed below are provided as suggestions and are not mandatory.

AIR EMISSIONS REDUCTION OPTIONS LIST

Employee and Supplier Education

- Contact your ink, coating, fountain solution, cleaning solvent, and suppliers of VOC containing materials regarding products that could be used to reduce the facility's VOC emissions.
- Inform employees about strategies to reduce air emissions, such as minimizing solvent use, keeping containers closed, and substituting materials for lower VOC containing materials.
- Train employees on proper product transfer techniques including pumping and pouring to minimize evaporative loss.
- Train employees to promptly, properly, and safely clean-up spills to minimize evaporative loss.
- Train your employees on the best application techniques for cleaning products.
- Use signs and other reminders to communicate to appropriate employees strategies to reduce air emissions, such as minimizing solvent use, keeping containers closed, and using lower VOC containing materials.

Cleaning Solvents (Applicable To All Print Processes)

- Use cleaning solvents with the lowest VOC content or vapor pressure possible (<10 mmHg), while meeting the facility's cleaning needs. (Note: Some state/local air pollution control agencies have established specific limits that need to be met.)
- Investigate low/no VOC cleaning solutions for general (non-press) cleaning.
- Dilute cleaning solvents with water to extend their use.
- Perform a three-stage cleaning process by using dirtiest solvent for the initial wash, cleaner solvent for second and cleanest (or virgin) solvent for final rinse.
- Determine and use the minimum volume of cleaning solvent needed to do each cleaning task and train employees in using the minimal amount.
- Implement operating practices that minimize cleaning solvent use.
- Develop a system to periodically monitor cleaning solvent quantities used by employees to do each cleaning task to ensure the least amount is used.
- Close all containers of unused cleaning solvents when not in use.
- Close all containers of waste cleaning solvents when not being filled or drained.
- Close all parts washers when not in use.
- Explore using low VOC or VOC free parts washing cleaning solutions.
- Store all used shop towels in closed containers.
- Allow all shop towels/wipers contaminated with solvents to gravity drain before sending them offsite for cleaning or disposal. Gravity draining can be accomplished by using false bottoms in towel collection containers.
- If economically and technically feasible, actively recover solvents from used shop towels/wipers with a wringer, centrifuge, explosion proof dryer or similar technology for either on-site or offsite recovery.
- Send used shop towels/wipers to a cleaning service/commercial launderer that removes and recovers solvent prior to washing them.



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- If economically and technically feasible, send used cleaning solvents off-site for recovery and reuse.
 - If economically and technically feasible, recover used cleaning solvents on-site.

Inks (Applicable To All Print Processes)

- Use inks with the lowest VOC content possible, while meeting the facility's production needs. (Note: Some state/local air pollution control agencies have established specific limits that need to be met.)
- Develop a system to periodically monitor ink use to ensure the least amount is used for each job.
- Close all containers of ink when not in use.
- Close all containers of waste ink when not being filled or drained.
- Train employees on the proper amount of ink required to print specific jobs.
- If economically and technically feasible, send used inks off-site for recovery and reuse.

Solvent-Based Ink Mixing

- Implement a software-based ink mixing program that uses leftover inks for new batches.
- Develop and use a program to calculate the anticipated ink quantities needed for the job to minimize leftover inks.
- For dedicated ink mixing rooms, evaluate opportunities to reduce fugitive emissions.
- Ensure that lids are on containers when mixing with floor and table post mixers.
- Train employees on the proper techniques of mixing inks to minimize spillage and fugitive emissions, including but not limited to: appropriate mixer speeds, cover use, proper dispensing, etc.
- Clean up ink spills immediately

Adhesives (Applicable To All Print Processes)

- Use adhesives with the lowest VOC content possible, while meeting the facility's production needs. (Note: Some state/local air pollution control agencies have established specific limits that need to be met.)
- Develop a system to periodically monitor adhesive use to ensure the least amount is used for each job.
- Close all containers of VOC containing adhesive when not in use.
- Close all containers of VOC containing adhesive waste when not being filled or drained.
- Educate employees on the proper amount of adhesive required to complete the job.
- If economically and technically feasible, send used adhesives off-site for recovery and reuse.

Plate Processing (Flexographic Print Presses Only)

- Plate processing equipment should be maintained properly to avoid chemical loss, potential leaks of hazardous materials into the drains, injury to employees, etc.
- Store plate developing chemicals consistent with manufacturers' recommendations.
- Remove excess chemicals with squeegees to reduce waste.
- Investigate alternative plate processing methodology with less environmental impact than solvent-based processing that will maintain print quality.
- Recycle plate processing solvents.

Press Cleaning (Flexographic Printing Presses Only)

- Clean anilox rolls promptly as a way to reduce the amount of solvent needed to remove dried flexo ink.
- Use enclosed doctor blade systems to reduce solvent evaporation during press operation. These systems also require less solvent for cleaning.

Blanket and Roller Cleaning (Lithographic Printing Presses Only)

- Investigate the feasibility of retrofitting automatic blanket washers for presses that are not equipped with the devices.
- Investigate the feasibility of converting automatic blanket washers to impregnated cloth for presses that are not equipped with the units.
- Use automatic cleaning systems such as automatic blanket and roller washes for lithographic presses when equipped.

Fountain Solutions and Additives (Lithographic Printing Presses Only)

- If alcohol is required in your fountain solution, add the minimum amount necessary.
- Switch from alcohol to alcohol substitutes.
- Reduce the concentration of VOC-containing additives when using alcohol substitutes.
- Refrigerate alcohol-containing fountain solutions.
- Filter fountain solutions to extend their working life.
- Close all containers of fountain solution when not in use.

Screen Reclamation (Screen Printing Only)

- Use cleaning solvents with the lowest VOC content or vapor pressure possible (<10 mmHg), while meeting the facility's cleaning needs.

Pollution Control Devices

- Investigate the need for pollution control equipment on heatset web offset lithographic presses, solvent-based flexographic, and rotogravure operations. (Note: Some state/local air pollution control agencies have established specific limits that need to be met.)
- For solvent-based flexographic and rotogravure operations with pollution control devices, install total enclosure or other capture devices to increase capture efficiency. (Note: Some state/local air pollution control agencies have established specific limits that need to be met.)
- Initiate a preventive maintenance plan to keep oxidizers running efficiently. Clean air filters, screens, supply and exhaust nozzles and plenums. Replace gaskets on doors. Adjust air supply and exhaust balancing dampers. Have burners maintained and tuned. Use only as much air/heat as needed. Balance fans and tighten belts.
- Explore retrofits to improved energy efficiency include improved ceramic heat recovery media; improved temperature control systems; improved air and gas ratio control for burner throttling; fuel injection; and better process interface systems.

- Explore installation of heat recovery devices to capture waste heat and reuse it in the facility such as for a chilling unit.

Fuels

- Close fuel containers (used for fueling onsite vehicles, generators, etc.) when not being used, filled, or drained.
- Investigate using low emission/renewable fuels for on-site consumption.
- When making new purchases/leasing new vehicles, consider low emission and/or non-fossil fueled systems.



AIR EMISSIONS REDUCTION RECOMMENDATIONS AND PROJECTS FORM

The following observations and recommendations were made during the air emissions assessment:

OBSERVATION	RECOMMENDATION

Using the checklist above, {YOUR COMPANY} has identified the following appropriate air emissions reduction projects for implementation at this facility:

PROJECT	RESPONSIBLE PARTY	TASKS REQUIRED	ESTIMATED COMPLETION DATE
1.			
2.			
3.			



AIR EMISSIONS ASSESSMENT SUMMARY REPORT

{Your Company} conducted an internal air emissions assessment on: *{INSERT DATE}*

The air emissions assessment was conducted at: *{INSERT FACILITY NAME AND/OR ADDRESS}*

The name and title of the person responsible for this assessment was: *{INSERT NAME AND TITLE}*

{INSERT RESPONSIBLE PERSON NAME } used the AIR EMISSIONS CHECKLIST, V 1.0, to conduct the assessment.

A record of this assessment is maintained in/at: *{INSERT WHERE RECORD IS KEPT}*

A total of *{X}* observations and *{X}* recommendations were made during the air emissions assessment. *{INSERT COMPANY NAME}* identified the following appropriate air emissions reduction projects for implementation as a result of this assessment:

1. *{INSERT AIR EMISSIONS REDUCTION PROJECT }*
2. *{INSERT AIR EMISSIONS REDUCTION PROJECT}}*

INSERT SIGNATURE of RESPONSIBLE PARTY
INSERT TITLE of RESPONSIBLE PARTY
INSERT DATE