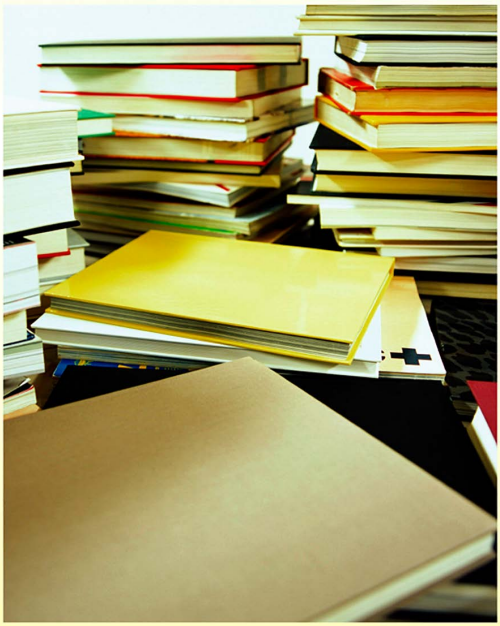
A SIMPLE GUIDE FOR PUBLISHERS AND PRINTERS TO REDUCE VOC EMISSION

環 境 保 護 署
Environmental Protection Department

Volatile Organic Compounds (VOC) are precursors to the formation of photochemical smog which affects our health and impairs the visibility in our city. Many products contain VOC and that include printing materials such as printing inks, fountain solutions and cleaning agents. As a publisher or printer, you can play an important role to reduce VOC emission from your day-to-day work by choosing only low VOC printing materials that are in compliance with the statutory limits and following some simple tips in this pamphlet. Please consult relevant experts or equipment/ material suppliers for advice specific to your needs.

Some considerations before committing to a printing job



- Printing hard copies only when they are essential. As a publisher, you should have a choice to opt for electronic means for the publishing and distribution of materials.

- Making a good estimate on the number of copies to be printed to avoid wastage.

- Using a design with the original paper colour as background and not ink colour.

- Eliminating the use of varnish, adhesives and glue as far as possible in the lamination or binding process.

What are the benefits of using low-VOC inks and materials?

Low-VOC printing inks and printing materials (e.g. fountain solutions, cleaning agents, adhesives and varnish, etc.) are now readily available, offering equally good print quality and operational performances. In choosing such low-VOC printing inks and associated products, you would help contribute to the reduction of VOC emission. The benefits are many and include:

- reduction in near-ground formation of ozone and fine particulates and thus help resolve our smog pollution problem.
- reduction in worker's exposure to hazardous chemicals such as toluene and xylene, and reduced odour on the shop floor.
- decrease in fire and explosion risks and waiver of a dangerous goods store for flammables.
- improvement of worker's health, safety and performance.
- general reduction in material costs and waste disposal costs.
- reduction in ventilation of shop floor [due to lower VOC concentration of indoor air].

VOC Regulation

To reduce the VOC emissions and improve air quality, the VOC Regulation has been implemented in phases since 1 April 2007 to control the VOC contents of printing inks, architectural paints and six selected categories of consumer products supplied in Hong Kong, and require emission reduction devices to be installed on lithographic heatset web printing machines. This regulation was amended in 2009 to extend the control in phases starting from 1 January 2010 to vehicle refinishing paints, vessel and pleasure craft paints, adhesives and sealants. In 2017, the regulation was further amended to cover fountain solutions and printing machine cleaning agents with effect from 1 January 2018.

How can I reduce VOC emission from printing inks, adhesives and coatings?

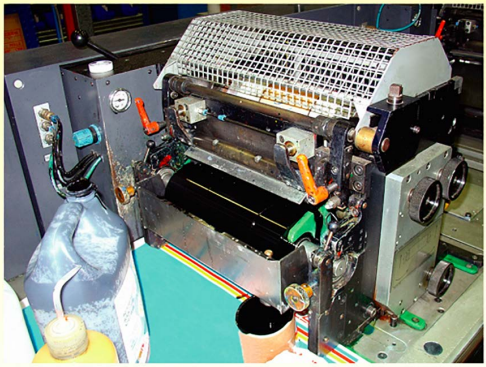
- Use low-VOC printing inks, e.g. vegetable-oil-based or water-based inks instead of petroleum-based. Specify in your purchase the use of low VOC inks as far as possible.
- Use low VOC adhesives.
- Use varnish of low VOC content.

How can I reduce VOC emission from fountain solutions?

- Use measuring container to accurately mix and prepare the fountain solution according to manufacturer's instructions where applicable.
- Develop the best acceptable range of conductivity value for your fountain solution by plotting daily measurements on a chart to relate the VOC content of solution to its conductivity value.
- Minimize the use of isopropyl alcohol and consider using low-VOC alcohol substitutes where appropriate.

How can I reduce VOC emission from printing machine cleaning agents and the good practices?

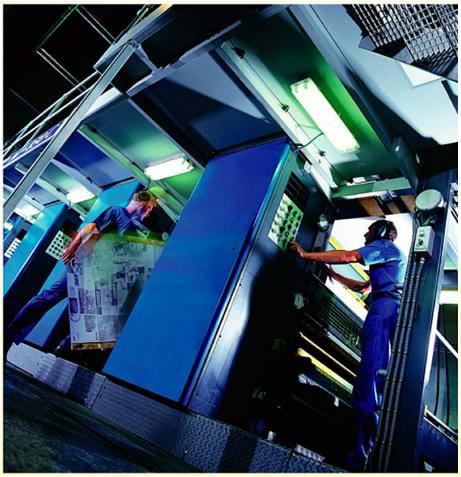
- Schedule runs of the printing machine to reduce colour changeovers to minimize the need for ink rotation, etc.
- Use automatic blanket cleaning system where possible.
- Use alternative low-VOC cleaning agents (e.g., vegetable-oil-based, water-based or detergent-based) and better still, use soaps and detergents instead of solvents where possible.



- Wipe off excess ink before cleaning equipment.
- Use press wipes for as long as possible; use dirty wipes for the first pass, and clean wipes for the second pass.
- Use compliant cleaning agents to remove printing inks and oils.
- Draw only enough amount of cleaning agent needed to complete the cleaning task. Control the use by employing plunger cans or squeeze bottles that moisten but not soak the wipes.
- Apply cleaning agent directly to roller blanket using squeeze bottle to minimize wastage.
- Wring dry soiled wipes and collect the run-off for reuse, e.g. for cleaning machine parts in a washing unit.
- Use self-closing dispensers, and store cleaning agents and soiled wipes in lidded containers. Always keep the lid on tightly to prevent fugitive release.

What should the management do to ensure low VOC emission from their printing shop?

- Assign a manager to develop and implement an emissions reduction plan.
- Seek advice from trade associations or make reference to good practices in other printing factories.
- Involve and educate every level of your staff in the decisions and improvement measures under the plan.
- Conduct regular review and audit of the plan and measures for continuous improvement.
- Measure and work out the amount of materials used in printing before and after implementing the reduction plan.
- Publicize your results and share your experience within the company and the trade.
- Liaise regularly with suppliers for new solutions and environment-friendly products.



Where can I get more information?

For more information, please contact:
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