

STRATEGIC PLANNING FOR THE UPCOMING
STATE AIR REGULATIONS REQUIRED
UNDER THE 1990 CLEAN AIR ACT

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Abstract: This paper depicts the major issues related to the management of air pollutant emissions required by the 1990 Clean Air Act Amendments.[1] A well-thought-of strategic plan dealing with those issues is essential to the survival of many medium- to large-sized printing plants in the rest of the decades. The reasons are that not only the required changes many printers will have to face are abundant but also that many of those changes may have profound effect on their printing operations. The paper is based on the author's hands-on working experience with 35 states' air pollution control agencies and more than 300 printing plants around the country.

Introduction

The Title V of the 1990 Clean Air Act mandates that each state revamps its existing air permit program and submits the draft program for the USEPA's approval starting November 1993. And by 1995, all states will have their new air permit programs in place. The revamping process is based on the USEPA's Operating Rules promulgated in July 1992 and many states have opted to incorporate the requirements of Title III - Hazardous Air Pollutants (HAPs) of the Clean Air Act in their programs.[1,2] The revamping will bring many sweeping changes to the control and permitting of air pollutant emissions, specifically VOC (volatile organic compounds) and NOx (nitrogen oxides) emissions for printing operations, which are tied with the non-attainment designation of the specific air pollutants.[3] It will also

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bring other issues to light, such as emission credit and trading, credit banking, offset, and emission surcharge.[4] Printers need to understand that their printing operations generate various air pollutant emissions, either in the form of fugitive emissions (from the use of inks and cleaning solvents) or stack emissions (from dryers and other direct emissions). Basically, all emission sources are required to have air permits to operate which are issued by the local, state, or federal agencies based on the size of emissions and the characteristics of air pollutants. Printers really need to carefully evaluate all related air emission issues against their individual printing operations and plan well in advance to cope with each issue or the consequences could be very costly and may even be detrimental.

Current Air Emissions Inventory

The very first thing printers need to do is to find out what their plants' actual and potential (means the plant operates at 8,760 hours per year at the highest operating capacity) emissions of VOCs, NOx, and HAPs are. The critical issue is whether a printing plant meets the definition of a "major source", which is an emission source that emits specific emissions exceeds individual thresholds designated by the Clean Air Act.[1] For example, the VOC emission threshold is likely 10 tons per year for facilities located in the Los Angeles area and 25 tons per year in the New York City area.[3] In other words, if a facility meets the definition, a new operating permit with a whole sleuth of new requirements to control the VOC emissions, such as RACT (reasonably achievable control technology) and BACT (best available control technology), will be required. But surprisingly, many medium- to large-sized printers don't have the information available to them. They really need it for the next major issue that will confront them for many years to come based on their strategic planning on business growth and plant expansion.

Printing Equipment Addition and Deletion Forecast

The next thing printers need to do is to evaluate the forecast of future printing equipment

requirement to meet the market demand and business growth. The reason is that each additional piece of printing equipment will generate certain amount of air emissions. For example, a commercial six-color 38" sheetfed press roughly will generate more than 5 tons of VOCs per year based on three shifts per day and 7 days per week operation.[4] The increased VOC emissions may push the permitted total VOC emissions over the state's limit on "major facility" and triggers certain emission control requirement, such as RACT and BACT. It may also require the printer to acquire the increased emissions either through the purchase in the emission trading market, the reduction of emissions from the existing facility by shutting down obsolete equipment/facility, modification of processes/chemicals, or the reduction of operational hours in exchange for reduced emissions. Acquiring the needed emissions, such as VOCs and NOx, could be very costly. For example, the current price for VOCs ranges from \$1,000 to over \$100,000 per ton depending on where the plant is located.[4] Modification of processes or change of chemicals may be difficult to achieve or hard to come by. Reduced operational hours may not be of the printer's best interest either because it does not give the printer the flexibility to operate. The printer may not be able to meet customer's urgent demand when needed. Another example, a new heatset web press may overload the capacity of the existing incinerator and trigger the need of a new incinerator and consequently add tremendous cost to the operation. These will be the dilemmas printers will have to face in the years to come. A very well-thought-of strategic plan is absolutely needed or the consequences could be very costly or detrimental.

Emission Credit, Banking, Offset, and Procurement

Shutdown of old presses, sell of presses, closing of facilities, modification of printing operations and processes, and change of chemicals, will result in various air pollutant emission reductions. These emission reductions after being verified and documented (banked) with the regulatory agencies are called emission credits. They can be used later to cover the business

growth and plant expansion or sold to other industrial facilities for a profit. All of those changes should result in the modification of the plants existing air permit to reflect those changes made. Printers need to keep in mind that only a portion of the emission credit can be used to offset the emission increase. For example, 1.3 tons of VOC credit can be used to offset only 1.0 ton increase of new VOC emissions in certain areas of the country.[5] The 1990 Clean Air Act has very stringent rules on the handling of emission credits.

Air Emission Minimization

Emission minimization, similar to the term "waste minimization" used in the handling of hazardous waste, is meant to minimize the air pollutant emissions from an emission source through a variety of means, such as printing process modification, operational change, and chemical substitution.[6] These emissions may include the emissions of VOCs and HAPs from a printing press. Printing process modification may cause the elimination of the use of certain chemicals, such as the waterless plate which eliminates the use of fountain solution and in turn reduces the VOC emissions. Operational change may result in the reduction of the use of wash-up solvents, such as the use of plunger type of solvent container which reduces the amount of wash-up solvent used per cleaning. Chemical substitution is simply to replace the high VOC content solvent used in the printing operation with others having lower or no VOC content. For example, alcohol substitutes replace isopropyl alcohol used in the fountain solution with less VOC emissions; water based adhesives replace organic solvent based ones with very little or no VOCs, low VOC content blanket and roller washes replace pure VOC organic solvents, such as hexane, toluene, and xylene, all hazardous and toxic organic solvents commonly used in the printing industry. The major benefit of emission minimization is to keep printers comply with specific federal, state and local air emission regulations as well as the conditions specified in the air permits of their plants. There are many side benefits from the elimination and reduction of the use of those hazardous

organic solvents. It eliminates the need of another air permit or extra permit conditions for the compliance of the upcoming HAPs regulations. [2] It also avoids the annual SARA (Superfund Amendments and Reauthorization Act) Title III Section 313 reporting requirement (R Form) when the use of any one of those organic chemicals is less than 10,000 pounds per year.[7] Besides, if those toxic chemicals are reduced to a minimum, printers may not have to worry about the additional compliance requirements on hazardous air pollutant emissions, such as air dispersion modeling, air emission episode plan, and emission monitoring.[2] In addition, the employee exposure to these toxic organic chemicals may also be greatly reduced or eliminated. This may be the most important benefit of conducting air emission minimization.

Emission Control Equipment Requirement Assessment

Many states very likely will change their minimum requirements on emission capture and destruction efficiencies for a few types of emission control equipment because of the 1990 Clean Air Act requirements. Some states may even impose specific control equipment requirement on individual operations. The soon-to-be-published Offset Lithographic Printing Control Techniques Guideline have fairly extensive discussion on this subject.[8] Complete understanding of these issues is very critical to the successful planning for the scheduled plant expansion or new equipment procurement if emission control equipment is an integral part of it, such as an incinerator or cooler/condenser for a new multi-color heatsetweb press. Assessing the need of emission control equipment, consulting with the regulatory agency, and acquiring the related permitting information at the early stage of planning are essential so that the planned emission control equipment will meet the specific regulatory requirements on emission control and therefore, the plant will obtain necessary permits to install and operate the equipment.

Keeping Informed

Keeping abreast of the development of the new

state air regulations may sound far-fetching and may even be considered ridiculous by many. In fact, this may be the only way to keep printers ahead of the game of environmental compliance and help printers plan properly in advance. One of the less known critical factors involved in the air permitting issue is the public comment and public hearing (if necessary) requirements. Printers must be informed and prepared for this very sensitive yet potentially very dangerous issue because the public may have the final say on the granting of the air permits to their plants.[1] Public relations (PR) plays a very important role in this process. A good PR with local residents and town fathers may become an even more important concern than the permit itself. Printers must be keenly aware this situation and be prepared for it very carefully. The Title V of the 1990 Clean Air Act also has a special provision on the establishment of a Technical Assistance Program for Small Business. In other words, small- to medium-sized printers may request the regulatory agencies for help when needed.[1]

Conclusions

With so many air emission related complex compliance issues on hand as described above, printers need to set up broad based strategic plan to establish their priorities and goals so that they can handle the upcoming state air regulations with ease. Each individual issue needs to be dealt with carefully and its potential impact assessed with sound business judgement. Then printers can put the whole situation under their control and proceed into the future.

References

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