Printers, both large and small, need to be aware of the new air pollution permitting requirements that are being imposed across the country. The printing industry along with other small business oriented industries are being targeted by the Environmental Protection Agency (EPA), and state/local air pollution control agencies because printers emit volatile organic compounds (VOCs).

VOC emissions are tightly controlled because they lead to the formation of ozone in the lower atmosphere. Ozone is a reactive form of oxygen and is a component of smog. EPA has established acceptable levels of ozone that can be present in the lower atmosphere and those areas exceeding it are considered non-attainment. Non-attainment areas are further classified as to the severity of the ozone problem and can be marginal, moderate, serious, severe, or extreme.

Air pollution control requirements are broken into two separate, but related requirements. The first involves permit requirements and the second is the imposition of control requirements. Permits serve several roles. They provide an inventory of air pollution sources. States and local agencies use these inventories in their planning process for either the further reduction of air pollution or maintenance of current air quality. Any control requirements designed to reduce the emissions of certain pollutants are always incorporated into a facilities permit. The last and most important function of permits is that they provide a facility with the legal basis for operation.

Permits can take several forms. Some state and local agencies require a permit-to-construct before any new facility can be built or more importantly, before a new piece of equipment like a printing press can be installed. Most state/local agencies that have these types of permits will generally allow a facility to accept delivery of a new press, but will not allow it to be assembled without the proper permits. The state and local agencies with the permit-to-construct will also require a permit-to-operate as well, and in some cases the construction permit can also serve as the operating permit. State and local agencies without a permit-to-construct program will still have a permit-to-operate program.

Permits-to-operate look very similar to permits-to-construct and will contain all applicable and enforceable control requirements. They may also contain recordkeeping and reporting requirements. Operating permits will have a definitive period of effectiveness. Some permits require an annual renewal, but more permits are being written with a five-year life term.

Besides the construction/operating permit systems described above, some states and local agencies have a registration permit system. Typically, these types of permits are less complex and do not require the facility to provide a significant amount of detail in the application forms.

Because of the 1990 Clean Air Act Amendments, another type of operating permit was created. These permits are called Title V permits and are a five-year federally enforceable operating permit. It will specify all control requirements, emission limits, recordkeeping, compliance reporting, compliance certification, and monitoring requirements. Title V permits will be administered by the state and local agencies and only apply to certain types of facilities, but will be reviewed by EPA.

Title V permits are not like any permitting program advanced in the past. It requires a detailed analysis of a facility's emission sources and must address the future utilization of the equipment and materials. It can not be relegated to the "engineering" department because it requires input from the operating, sales and marketing, and administrative departments. Current and future strategic business decisions have to be made within the context of the Title V permitting process.
The need to obtain an air pollution control permit depends on the threshold that has been set by the state and local air pollution control agency. The thresholds can be based on several different parameters. Some state and local agencies use actual emission rate/amount while others use potential emissions rate/amount. Some agencies use actual material consumption rates to determine if permits are required.

The permitting thresholds can vary quite dramatically. For example, in New York City, all printers regardless of their emission rate are required to have a permit. The Illinois EPA requires a permit for any printer who uses more than 750 gallons per year of VOCs, while Indiana’s threshold for permitting is 25 tons/year potential VOC emissions. Printers in Indiana with emissions less than 25 tons/year potential are required to register their business with the state.

The Title V permit uses a facility's annual potential amount to determine applicability and apply to both VOC and hazardous air pollutant (HAP) emissions. HAPs are a list of 189 individual chemicals and chemical categories. The most common chemicals on this list used by lithographers is glycol ethers which can be found in alcohol substitutes and cleaning solutions. The threshold for permitting is 10 tons/year for a single chemical/category and 25 tons/year for all HAP chemicals/categories. These thresholds are universal in that they apply across the entire country.

The Title V thresholds for VOC emissions are dependent upon the geographical location and severity of the non-attainment problem. The only extreme area is Los Angeles, Ca and the threshold is 10 tons/year. Severe areas like Chicago, IL, Philadelphia, Pa, and New York City area have thresholds of 25 tons/year. Serious areas like Atlanta, GA have thresholds of 50 tons/year. Moderate and Marginal areas like Pittsburgh, Pa, have thresholds of 100 tons/year.

"Potential to emit" is defined as the greatest amount of emissions that could be released from a piece of equipment based on its maximum design capacity or maximum production. Potential to emit determinations must also assume the equipment will run 24 hours/day 365 days/year or 8,760 hours/year. There are at least three different ways to calculate potential emissions from a printing press.

The worst case scenario is to assume 100% coverage on all cylinders at maximum press speed for 8,760 hours/year. In a study performed on a printer using water-based flexography and letterpress to manufacturer corrugated boxes, their 5 ton/year actual emissions climbed to 4,000 tons by assuming the worst case scenario. While this method is not realistic, some state agencies insist that printers use this method. The method preferred by industry would be to take the actual hourly emission rate and multiply it by 8,760 hours/year. In the same study performed on the corrugated manufacturer, the potential emissions using this approach would be 20 tons/year. EPA has not issued a policy dictating any approach.

In addition to determining the appropriate threshold, the printer must also determine their VOC/HAP emission levels. This is accomplished by first deriving material use information. The materials include, but are not limited to inks, fountain solutions, fountain solution additives, coatings, cleaning solutions, and other miscellaneous use chemicals. Material use is defined as the amount purchased minus the amount discarded. The amount released is determined by multiplying the amount used by the VOC content and if appropriate, an emission factor. An emission factor is the number used to reflect the actual release of materials. For example, a 5% emission factor is applied to all sheetfed offset lithographic inks. Studies conducted by the printing industry have shown that 95% of all ink oil is retained by the substrate.

Every printer, whether operating a large or small facility, must know and understand the air pollution permit regulations applicable to their facility. Knowing and complying with these regulations are crucial for printers because it allows them to legally operate their businesses under the current
regulatory requirements. Even if a printers does not have to permit their business, it is equally important to know and prove that they are not subject to the regulation. This aspect of the printers business needs to be actively managed just like other important aspects of the business. In the long run, an active approach benefits the printer rather than the alternative of ignoring them, where it will ultimately become an enforcement action and a business liability.

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