

Ritrama reduces VOC emissions by installing emissions control equipment!



Background:

Ritrama was founded in Milan, Italy in 1962 by Mr. Arnold Rink. The company came to the United States in 1990, with the purchase of facilities in Minneapolis and Cleveland. Ritrama is a worldwide manufacturer of pressure sensitive adhesive roll materials. They make traditional and specialty films, roll labels, and visual graphics products.

Process:

The process of manufacturing pressure-sensitive adhesive products requires solvent use in various areas of the manufacturing process. The largest source of air emissions within the process in Minneapolis comes from the adhesive drying oven. A secondary emissions source comes from cleaning adhesive residue from various parts of the manufacturing process. This residue must be cleaned to keep the process operational, and the cleaning process uses solvents that evaporate and become air emissions.

Motivation:

Historically, Ritrama's drying process has generated toluene, and the cleaning operations have used toluene. Toluene is an inexpensive solvent that excels at removing the adhesive. Toluene has a photochemical reactivity of 3.88, meaning that for every pound of toluene released, 3.88 pounds of ozone are created. In 2001, the Ritrama facility in Minneapolis made the decision to install a thermal oxidizer in order to drastically reduce the VOC's released from the facility, and to substitute their use of cleaning toluene for a less hazardous solvent. These changes also helped Ritrama to decrease their reportable amounts under Toxic Release Inventory (TRI) requirements.

VOC Reduction Process:

The solvents generated in the adhesive heating process at Ritrama are now treated using a regenerative thermal oxidizer. The solvent vapors sent through this process control equipment are combusted and transformed into carbon dioxide and water prior to being released into the atmosphere. The thermal oxidizer was tested at an impressive 99% destruction efficiency while running at full capacity.

The chemical chosen to replace toluene in the adhesive residue cleaning process was methyl ethyl ketone (MEK). MEK has a photochemical reactivity of 1.43, which corresponds to 63% less ozone creation than an equal weight of toluene. Additionally, MEK is not considered a hazardous air pollutant (HAP) by the EPA or MPCA. The process of changing from toluene to MEK was as simple as purchasing the MEK solvent and phasing out the use of the solvent containing toluene. Ritrama also recently switched from using toluene in custom adhesives to using ethyl acetate. Ethyl acetate has a photochemical reactivity of .59, which means that it produces 85% less ozone than an equal weight of toluene. It is also not a TRI reportable chemical, and not considered a hazardous air pollutant.

The results of Ritrama's toluene reduction effort within their Minneapolis facility can be seen below. From 2001 to 2011, toluene air releases are down 98.9%, while total VOC's are down 92.8%.

YEAR	TOLUENE AIR RELEASES (LB)	TOTAL VOC'S (LB)
2001	130,000	350,017
2011	1,477	25,247
% REDUCTION	98.9 %	92.8%

