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Governor's Pollution Prevention Award, 1998 Recipient **RJF International Corporation**

RJF International Corporation is being recognized for:

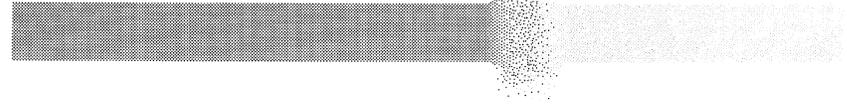
◆ ***elimination of more than 236,700 pounds of hazardous waste,***

◆ ***elimination of 160,000 pounds toxic air pollutants from the processing operation,***

◆ ***elimination of MEK use in ink and coating recipes, and***

◆ ***elimination of color pigments using cadmium.***

RJF International Corporation



The Governor's Awards for Outstanding Achievement in Pollution Prevention have been presented since 1986. RJF International Corporation was one of seven recipients to receive the Award in 1998. These awards recognize outstanding commitments to improve Ohio's environment through pollution prevention. Evaluation criteria for the awards include: the reduction of waste at the source, recycling or recovery of materials, cost-effectiveness, ability of the program to serve as a model for others, and effectiveness in promoting pollution prevention as the preferred long-term approach for environmental management.

RJF International Corporation

RJF International Corporation (RJF) is a customer-oriented manufacturer of engineered polymer products for select specialty markets. RJF manufactures wallcovering, wall protection systems, matting, specialty film, and profile and sheet extrusions that serve many industrial, residential, medical, and government needs. Many of the customized, polymer-based products offered by RJF enjoy market leadership positions and are used in applications such as: wallcovering in an exclusive luxury hotel, protective linings in a chemical tank farm, flooring for the combat information



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center onboard a high-tech Navy ship, and door weather-stripping seals. Company sales grew 60 percent over the past five years while employing 520 people in Ohio with 425 at the Marietta plant. RJF Marietta is a manufacturing facility located on a 67 acre site along the west bank of the Muskingum River approximately two miles north of Marietta in Washington County, Ohio.

Pollution Prevention Activities

As a part of the RJF Marietta manufacturing process, inks and other coatings are applied to supported, embossed, vinyl film. The vinyl film manufactured at this facility contains stabilizers and phthalate ester plasticizers.

In the past, the stabilizers were the barium/cadmium/zinc type. Inks and coatings contained up to 86 percent by weight of methyl ethyl ketone (MEK) or, in the case of water based coatings, were solvated with glycol monobutyl ether. Vinyl film was plasticized with di-2-ethylhexyl phthalate (DEHP).

In 1993, the facility implemented a pollution

prevention program and made a decision to reduce the amount of toxic chemicals used in the production of its products in an effort to provide products with a nontoxic life cycle.

The Pollution Prevention Program focused on chemical substitution in the coatings and inks formulation and on the stabilizer system used in the formulation of the vinyl film. Past practices for waste management were end of the pipe efforts to handle wastes at permitted treatment, and storage and disposal facilities that used energy recovery methods. No program was in place to reduce air emissions.

The pollution prevention team was able to remove cadmium and MEK from formulations. They were able to reformulate the water borne ink system to remove glycol n-monobutyl ether and substitute a glycol ether which meets the parameters set forth for non-reporting under SARA 313. The team was also able to replace the long used DEHP with the di-isononylphthalate (DINP)

Results of the efforts:

- Barium/cadmium/zinc

stabilizers have been replaced with a barium/zinc product,

- Color pigments using cadmium have been replaced,
- DEHP plasticizer, a listed hazardous air pollutant, was replaced with DINP, a plasticizer not listed on the SARA 313 list nor as a hazardous air pollutant,
- Glycol monobutyl ether in coatings was replaced with a propylene glycol ether, which is not subject to the glycol ether category in TRI, and
- The largest reduction in pollution has come as a result of modifying the ink and coating recipes to use a water borne system, eliminating the use of methyl ethyl ketone.

SARA 313 Toxic Release Inventory (TRI) reports from 1993 through 1995 placed the facility as the fifth largest emitter in the Washington County with total reportable emissions during that period ranging from 436,124 pounds to 365,169 pounds.

After the pollution prevention improvements, the 1998 TRI submission for report year 1997 will show a total of 10,144 pounds, or a 97.7

RJF International Corporation

percent reduction from the 1993 level of emissions. Of the total, 9,637 pounds of emissions were captured and sent to a licensed facility for treatment.

Environmental Benefits

The possibility of impacting air, water and soils during transportation, storage or processing has been reduced since raw materials and wastes containing MEK, DEHP, cadmium and glycol monobutyl ether have been eliminated. These raw material substitutions have eliminated emissions from the processing operation of more than 236,700 pounds of hazardous waste and 160,000 pounds of toxic air pollutants.

Health and Safety Benefits

RJF Marietta's employee's and neighbor's potential exposure to toxic pollutants has been reduced by these raw material substitutions. The potential for fire or explosion has been drastically reduced by the elimination of methyl ethyl ketone, a solvent with a flash point of 27 degrees Fahrenheit.

Management Commitment

All of RJF Marietta's management, including the Owner and Chief Executive Officer, the President and Chief Operating Officer, and the Senior Management Committee are committed to the pollution prevention process, especially for raw material substitution. People and financial resources were made available for this very important project and continue to be available as new opportunities for pollution prevention arise.

Transferability

The technology for these raw material substitutions are generally available throughout the industry. Stabilizer, plasticizer and ink vendors are available to work with plant technical personnel to make the substitutions. Only the commitment to make the substitutions is necessary.

Economic Benefits

While the inks used to color the wallcovering have nearly doubled in cost, other considerations have partially offset the increased costs. As a result of the changes, the facility has been able to:

- avoid Title V status under the Clean Air Act Amendments, which would have cost nearly \$150,000 per year in administration and monitoring,
- avoid the purchase of control equipment, estimated to cost in excess of \$1.6 million, with annual fuel operation costs of \$250,000 (maintenance costs for the control equipment are in addition),
- reduce the potential costs associated with transportation accidents, and
- reduce the potential costs associated with plant fires, health problems, waste handling, and environmental remediation.

For More Information

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This is one in a series of documents Ohio EPA has prepared to promote pollution prevention activities in Ohio and integrate pollution prevention into Ohio EPA programs. For more information, call the Office of Pollution Prevention at (614) 644-3469.

The Office of Pollution Prevention was created to encourage multi-media pollution prevention activities in Ohio to reduce risk to public health, safety, welfare and the environment. Pollution prevention stresses source reduction and, as a second choice, environmentally sound recycling while avoiding cross media transfers. The Office develops information related to pollution prevention, increases awareness of pollution prevention opportunities, and can offer technical assistance to business, government, and the public.

Office of Pollution Prevention WWW address: www.epa.state.oh.us/opp