OhioEPA

Office of Pollution Prevention

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*Governor's Pollution Prevention Award, 1998 Recipient*

# Honda of America Mfg., Inc., Marysville Motorcycle Plant

***Honda of America's Motorcycle Plant is being recognized for using powder coat paint technology instead of solvent-borne paints to paint its motorcycle and sport utility vehicle frames and gas tanks. In 1997, this project reduced VOC emissions by 26.1 tons, eliminated 1,300 gallons of purge solvent from the painting process, and reduced paint sludge waste generation by 14.6 tons.***

The Governor's Awards for Outstanding Achievement in Pollution Prevention have been presented since 1986. Honda of America Mfg., Inc. 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.

HONDA
Honda of America Mfg., Inc.

## Honda of America Mfg., Inc., Marysville Motorcycle Plant

The Marysville Motorcycle Plant (MMP) manufactures motorcycles and utility vehicles. The plant performs frame manufacturing, welding, plastic injection molding, painting, assembly, testing, quality assurance, shipping and export operations. This plant has a production capacity of 150,000 units annually. Historically, it has painted its motorcycle and utility vehicle frames and gasoline tanks with solvent-borne paints and, as a result, used solvents to clean the paint lines. This traditional method created a significant amount of air emissions, solid waste paint sludge from the capture of



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paint overspray, and waste cleanup and flushing solvent.

## Pollution Prevention Activities

The MMP Paint Department implemented a production process redesign which replaced a solvent-based paint coating line for motorcycle and utility vehicle frames and fuel tanks with a powder coat painting system. The powder coat process improved the production efficiency of the coating line which significantly reduced both air emissions and waste generation. This project was voluntary and not required by any current regulations or permits.

The solvent-borne coatings historically used to coat metal motorcycle and utility vehicle frames and gasoline tanks had volatile organic compound (VOC) contents ranging from four pounds to seven pounds per gallon. These coatings typically included solvents such as methyl ethyl ketone (MEK), toluene, xylene, and glycol ethers. Approximately 0.17 gallons per unit was used. Purge solvent, containing n-butyl acetate, methyl amyl ketone (MAK) and n-butanol, was used to clean the paint distribution system and spray equipment during color changes and for equipment clean up at the end of the shift. The coatings were applied using electrostatic application in coating booths. Water curtains in the booth were used to collect paint overspray. The wastewater flowed to a treatment pit where chemicals were added to detactify the paint solids and cause them to float to the surface for collection. The solids were filtered to remove the excess water and landfilled. Finally, the coated parts were cured in a natural gas fired oven.

The solvent borne coating process was replaced with a powder coating booth. Powder coating is applied to each motorcycle frame and gasoline tank. Powder coat is recyclable and contains no hazardous air pollutants. The parts are then baked in a natural gas fired oven. The system was installed in July, 1997.

## Ohio Prevention First

Honda of America, Marysville Motorcycle Plant is an active participant in the Ohio Prevention First initiative, which provides an important opportunity for business and industry to take a leadership role in environmental protection without additional regulatory demands.

## Environmental Benefits

This project helps protect the environment by reducing VOC and SARA emissions, eliminating purge solvent waste generation, and eliminating paint sludge waste generation.

Replacement of the solvent-borne coating significantly reduced VOC and SARA emissions. This reduction was due to the elimination of solvent-borne paints and purge solvent used to clean paint delivery systems. Total VOC emissions from the coating operation were reduced by 26.1 tons in 1997 and are projected to be reduced by 52 tons in 1998, the first full year of operation. SARA emissions were reduced by 7.8 tons in 1997 and are projected to be reduced by 16.5 tons in 1998. The new powder coat process eliminated the use of purge solvent. This resulted in a reduction in purge solvent usage of approximately 1,300 gallons/year and a reduction in related

waste purge solvent generation.

With the electrostatic solvent-borne coating application, about 75 percent of the paint solids do not get on the part being coated. Water was used to capture the paint overspray to prevent the discharge of particulates. The paint solids were treated with chemicals for detactification, captured, filtered and shipped to a landfill for disposal. With the powder coat process, 98 percent of the material is utilized in the paint booth. To accomplish this, approximately 60 percent of the powder sprayed actually remains on the part, and most of the remaining material is reused in the process. This has eliminated the generation of paint sludge from this process.

With the help of the powder coat process at MMP, Honda of America exceeded its Ohio Prevention First initiative goal two years ahead of schedule. In 1993, Honda set a goal of 115.4 pounds per auto unit produced for the year 2000. Actual releases for 1997 were 86.8 pounds per auto unit.

## Health and Safety Benefits

The health benefits to the MMP associates result from reduced exposure to hazardous chemicals contained in the paints and cleaning solvent previously used.

Safety benefits result from the elimination of the manual grounding process required for electrostatic painting to eliminate the potential risk of sparking, which could cause a fire within the paint booth, and reduced handling of hazardous materials. The powder coating process includes automatic grounding which prevents the risk of a spark and significantly reduces the risk of a fire.

## Management Commitment

The MMP environmental policy emphasizes Honda's commitment to pollution prevention and acknowledges the importance of voluntary commitments such as the Ohio Prevention First initiative. All associates at MMP are made aware to the policy through periodic awareness training and communication activities. MMP management encourages its production associates to look for pollution prevention opportunities through Suggestion System programs.

MMP management has also demonstrated its commitment to pollution prevention by achieving ISO 14001 certification.

## Transferability

Powder coat is an evolving technology in the motorcycle industry. It has previously been used by competitors for clear coat applications on metal gasoline tanks. Customers purchasing a motorcycle have very high paint quality expectations. Any coating process must meet these quality specifications. This requirement makes it difficult to compare a motorcycle powder coating application to an application in a different manufacturing segment.

To promote this application to the public, Honda has published a news article in its company magazine called the Wing. The Wing is mailed to all associates and available in the plant lobbies for visitors. Honda also sponsors an annual environmental conference for its suppliers. At this

conference, Honda shares timely information related to environmental issues, including pollution prevention, ISO 14001, regulatory developments and others.

## Economic Benefits

The implementation of the powder coat system resulted in many overall economic benefits. These economic benefits are listed below. The benefits are on an annualized basis.

• Raw material cost per unit was reduced by 63 percent. This represents the difference between the cost of the liquid paint and the cost of the powder.

• The total cost of the use of purge solvent (including the purchase and disposal cost) was reduced by approximately $22,000.

• Outside contractor service costs were reduced by approximately $22,300. Previously, outside contractors were used for paint booth cleanup, but are no longer needed.

• Transportation and landfill costs for paint sludge disposal were eliminated for a reduction of about $900.

• Process manpower requirements were reduced, resulting in a cost savings of approximately $275,000.

## 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***