

Conclusions

Mike's Auto Body is a leader in the Massachusetts automotive industry. The ownership and management were eager to delve into safer alternatives for both auto body and repair services, resulting in large pollution prevention achievements. Some of these switches resulted in economic savings, while others were more expensive to implement. However, the net result is savings, as shown in the table below.

	Previous Product	New Product		Annual Savings & (costs)
	Annual Cost	Capital Investment	New Annual Cost	
Wheel Weights	\$175	\$644	\$730	(\$555)
Paint Gun Washer	\$700*	\$1,912.50	\$30	\$643
Brake Cleaning & General Degreasing	\$2,000	0	\$475	\$1,525
Wheel Cleaning	\$300	0	\$542	(\$242)
Total Annual Savings:				\$1,371

Regardless of the economic turnout, the shop prides itself on being responsible to its workers, community, and environment – creating a safer and healthier place to work. TURI and OTA were pleased to work with Mike's Auto Body on this project, and hope that other shops will learn from their efforts.



The Toxics Use Reduction Institute (TURI) at UMass Lowell provides the resources and tools to help Massachusetts companies and communities make the Commonwealth a safer place to live and work. TURI has awarded 40 Massachusetts companies more than \$500,000 since 1996 to discover new opportunities to reduce the use of toxic chemicals and to demonstrate technologies to peers. For more information, visit <http://www.turi.org> or contact Joy Onasch at joy@turi.org or 978-934-4343.



The Massachusetts Office of Technical Assistance and Technology (OTA) provides free and confidential services to businesses to reduce toxics use and conserve energy, water, and other resources. To learn more about our non-regulatory services or to schedule a site visit, see OTA's website at <http://www.mass.gov/eea/ota> or contact Tiffany Skogstrom at tiffany.skogstrom@state.ma.us or 617-626-1086.



Making Massachusetts a safer place to live and work



Auto Body Shop Improves Work Environment by Going Green

Mike's Auto Body in Fall River Makes Environmentally Friendly Changes – Improving Work Place Conditions and Helping the Bottom Line

Summary

Auto mechanics can be exposed to lead, solvents, acids and other toxics during their work day. This case study describes work undertaken at Mike's Auto Body to reduce these exposures by reducing their use of toxic chemicals and materials, with assistance from the Massachusetts Office of Technical Assistance (OTA) and Toxics Use Reduction Institute (TURI).

In 2014, OTA visited the Fall River shop and staff pointed out the opportunities for switching to safer alternatives to the toxic chemicals found in wheel wash, spray gun wash, brake cleaner, degreaser, and lead wheel weights. The staff at Mike's Auto Body was enthusiastically open to trying these methods to improve safety for their workers and their environment. The shop received a TURI grant in 2015 to purchase safer alternatives for wheel weights, spray gun and brake cleaning chemicals, general degreasing, and wheel cleaning.

Wheel Weights

For Mike's Auto Body, switching to non-lead wheel weights meant reducing inventory and the need for storage space. The switch also meant removing a heavy metal from their shop and from the cars they work on and send out onto the streets. The conventional wheel weights containing lead often end up falling off wheels and contaminating road sides.



Lead wheel weight inventory before switching to non-lead system

Mike's switched to a non-lead wheel weight system sold by 3M. The product has an acrylic foam tape adhesive on a conformable weight. The exact makeup of the weight is a trade secret, so there may be unknown hazards; however, they are confirmed to be lead-free. The adhesive weights are dispensed, measured, and cut-to-size on a flexible adhesive tape roll. The shop was pleased to reduce inventory, saving space on their shop floor and reducing clutter by not having various sized weights in storage. They also find the roll easy to work with and adhere to the wheels.



Non-lead wheel weight roll and cutting system

Financial Analysis

The shop previously spent \$175 per year on lead wheel weights. The 3M system was an initial investment of \$774 – including the holder, 4 rolls of weight materials, and shipping. The cutting unit was donated by the vendor (estimated cost \$600). The inventory of non-lead wheel weights should last the shop at least one year – the weights themselves cost \$730. Therefore, the shop is spending an extra \$555 on wheel weights per year – a cost that they feel is worth the investment and is recouped in other material purchases.

Paint Gun Washing

Previously, Mike's used a lacquer thinner (Keystone Platinum Refinish Gun Wash) in a solvent-based paint gun washer to clean paint guns used for both water- and solvent-based paints.

The product contains a known developmental toxicant as well as ingredients that cause reproductive harm and are extremely hazardous for eye, skin, and respiratory exposure. The product is also highly flammable and contains hazardous air pollutants.

Lacquer Thinner ingredients:
methyl alcohol, toluene, acetone,
aliphatic petroleum distillates,
and 2, 2-dimethoxypropane.

TURI and OTA staff provided Mike's with cost and technical information for a water-based alternative paint gun washing material, Acrastrip® 600 by U.S. Polychemical Corp. This Acrastrip® product meets U.S. EPA requirements for the Safer Choice label (formerly Design for Environment (DfE)). Its active ingredients are: 1-methoxy-2-propyl acetate, dimethyl ester pentanedioic acid, dimethyl ester butanedioic acid, 1,6-dimethylhexanedioate, and dipropylene glycol methyl ether. Though the product is approved to carry the Safer Choice label, there are still some hazards associated with the ingredients (e.g., developmental toxicity, eye irritation, flammability, acute aquatic toxicity, and neurotoxicity). Acrastrip® 600 is water-based and is non-flammable.

The shop is very pleased with the performance of the Acrastrip® product. Mike's Auto Body will no longer need to dispose of the spent gun washer fluid as hazardous waste, and the filtered product may be continually used for as long as six years, based on the experience of other body shops using the product.

Mike's Auto uses water-based paints to the extent they are available. The shop still uses primer and clear coat that contain solvents, since there are currently no water-based alternatives for these products.

Financial Analysis

Mike's purchased an additional paint gun washing unit by Uniram for \$1,912.50 (including \$112.50 in sales tax) so that their shop is now equipped with two separate paint gun washing units that both use the water-based Acrastrip® product. One paint gun washing unit is dedicated to their water-based paint line, while the other is used for paint guns that are soiled with primer or clear coat. Using two separate paint gun washing units prevents cross contamination between water and solvent based wastes and chemicals.



Old paint gun washers. Herkules solvent unit was replaced with another Uniram as on the right

Mike's Auto Body purchased one \$173 five-gallon container of Acrastrip® for each gun washing unit. Each container of Acrastrip® could last for approximately 6 years with proper filtering and maintenance. The shop previously spent \$500 on spray gun washing product per year, and an additional \$200 on spent gun wash hazardous waste disposal. Therefore, there is an operating cost savings (assuming a 6 year life for the Acrastrip®) of \$643/year. This results in a payback period of approximately 3 years.

Break Cleaning & General Degreasing

The materials previously used by Mike's Auto Body for brake cleaning and general degreasing included products made by Trans-mate (tire cleaning products, an aerosol window cleaner, glass cleaner, and Wash Wax detergent). To find safer and healthier options, Mike's Auto Body ordered Trans-mate Enviro-Mate products labeled as "earth friendly products". As noted by the vendor, these products are:

- Made with selected detergents/emulsifiers that have been shown to be biodegradable using OECD or ASTM test methods and/or meet the standards of EPA's Safer Choice label;
- Free of environmentally harmful surfactants such as nonylphenol ethoxylates (NPEO) or other alkylphenol ethoxylates (APEO);
- Contain no hydrofluoric acid or ammonium bifluoride;
- Are phosphate-free and chlorine-free; and,
- VOC Compliant.

Financial Analysis

Mike's used to spend \$2,000 on brake cleaners and general degreasers over the course of a year. For the new products, the shop purchased enough inventory to last four years and spent just over \$1,900, yielding an annual cost of \$475. This leads to a savings of \$1,525 per year.

Wheel Cleaning

Mike's Auto Body used to wash and polish wheels with a product called Professional Wire Wheel Cleaner containing hydrofluoric acid and sulfuric acid along with surfactants and 2-Butoxyethanol. The pH of the product is 1, and therefore very corrosive. Hydrofluoric acid is one of the most hazardous acids, with the potential to eat through tissue and even bone. The two acids are also listed as reportable chemicals under the Massachusetts Toxics Use Reduction Act (TURA). Mike's Auto Body chose an alternative called White Wall which contains sodium metasilicate as well as the surfactant 2-Butoxyethanol. Although there are some health concerns with sodium metasilicate and 2-Butoxyethanol, White Wall is a safer alternative to Professional Wire Wheel Cleaner.

Financial Analysis

Mike's previously spent \$300 per year on Professional Wire Wheel Cleaner. A year's supply of two 55-gallon drums of the alternative product cost \$542. Therefore the shop is spending more money on the replacement product but with significantly improved safety and health implications.

Additional Initiatives

Mike's Auto Body hopes to continue making improvements to their shop to create the healthiest and safest environment for their workers and their neighbors. They also hope to install solar panels to the roof of their shop to provide electricity.

Mike's Auto

Mike's Auto Body, owned by Mike Penacho, is located at 535 Bay Street in Fall River MA. Seventeen full time employees work in the 10,490 square foot shop. The shop provides auto body and collision, auto repair, and car rental services. The body and repair shops work on an average of 18 cars each week.



"We feel that using safer products is the right thing to do. We want to make our shop safer for our workers and better for the environment. We were pleased to receive financial and technical assistance from TURI and OTA. It gave us information that made us aware of how bad some of these products are and how to make a safer work place."

**Steve Medeiros,
Customer Advocate at
Mike's Auto Body**