



912 Auto Center



Making Massachusetts a safer place to live and work

## Additional Initiatives

Dossantos takes pride in the health and safety of his employees and protecting his neighborhood and its environment. He is using car cleaning products that are environmentally friendly and has branded his shop as “Go-Green.” He is considering installing solar panels on the roof to generate electricity, planting a roof garden, and re-using gray water within the shop.

## Conclusions

912 Auto Center made a number of changes to their operations when they moved their location to Dorchester from Mattapan. These changes were spurred by the owner’s commitment to improving the quality of both his product and the working environment. The success he has experienced as a result of switching from primarily solvent-based painting and paint gun washing to primarily water-based painting and paint gun washing systems has been significant. Operating costs are reduced, performance and productivity are improved and worker satisfaction is enhanced.

The dramatic decrease in the handling, use and disposal of hazardous materials at the shop has prompted Larry Dossantos to look for even more innovative ways to “Go Green” and be an example to the neighborhood and to his business sector. He has shown how reducing the use of toxic chemicals can be a winning proposition on multiple dimensions – financial, environmental, and health and safety – and how long range thinking can lead to long range business opportunities.



*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 Pam Eliason at [pam@turi.org](mailto:pam@turi.org) or 978-934-3142.*



*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](mailto:tiffany.skogstrom@state.ma.us) or 617-626-1086.*

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# Auto Body Shop Saves Money by Eliminating Solvent



912 Auto Center

## 912 Auto Center in Dorchester Switches to EPA-recognized Paint Gun Washer

### Summary

In 2007, Larry Dossantos, the owner of 912 Auto Center, moved his shop from Mattapan to Dorchester. The Boston Public Health Commission (BPHC) visited the new location as part of the outreach under their Safe Shops Program ([www.bphc.org/safeshops](http://www.bphc.org/safeshops)). BPHC staff recommended that 912 Auto investigate using water-based paints and a water-based paint gun washer instead of re-installing the previous solvent-based system. BPHC explained to Dossantos that a new spray booth could be equipped with the technology to accommodate water-based paint, including a drying feature to “bake” the paint onto the vehicle. The previous system relied on passive evaporation of the solvents in the paint. Additionally, a water-based paint gun washer could clean both solvents and water-based paints.

A new spray booth to accommodate water-based paints was installed in 2008. Dossantos now uses the DuPont™ Cromax® Pro (<http://upgrade2water.dupont.com>) line of water-based paints for the majority of the work conducted at the shop. 912 Auto also purchased a new paint gun washer that uses a water-based cleaning material, [Acrastrip® by Polychemical Corp®](http://www.uspoly.com/acrastrip.html) (<http://www.uspoly.com/acrastrip.html>).

## The Process of Switching to Water-Based

For 912 Auto Center, the process to switch to water-based tools and materials involved two main initiatives:

- Paint Gun Washer Conversion
- Paint Conversion

### Paint Gun Washer Conversion

Previously, Dossantos' shop used a low volatile organic compound (VOC) gun wash solution in a solvent-based paint gun washer. The material safety data sheet (MSDS) for the VOC compliant Naked Gun Cleaner® by Klean-Strip® lists the active ingredients as:

- 2-propanone (also known as acetone)
- butyl acetate

Hazards associated with the Naked Gun Cleaner® include flammability, and neurological toxicity and eye and skin irritation. The material is classified as hazardous under OSHA regulations.

With its original system, 912 Auto also had to use a lacquer thinner to pre-clean a gun when it was very dirty. Since switching to the new gun washing system, he no longer needs to do this. The lacquer thinner contained:

- acetone
- naphthalene
- toluene
- xylene

Hazards associated with this product include flammability, carcinogenicity, endocrine disruption, reproductive, developmental and neurological toxicity, eye and skin irritation and high aquatic toxicity. The shop used 10 gallons of lacquer thinner every month and disposed of the used material as hazardous waste.

Clearly, moving away from the use of these toxic chemicals was in the best interest of the workers and the environment.

BPHC Safe Shop staff provided Dossantos with cost and technical information for a water-based alternative paint gun washing material, Acrastrip® by U.S. Polychemical Corp. Acrastrip® is U.S. EPA approved under their Design for Environment (DfE) program as a safer chemical. 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 EPA DfE approved, there are still some mild hazards associated with the ingredients (e.g., eye irritation, acute aquatic toxicity and neurotoxicity).

After six years, 912 Auto Center still uses Acrastrip®. In fact, the original five gallons of product purchased in 2008 is still being used at his shop. By switching to a water-based gun wash formulation 912 Auto reduced its use of and exposure to toxic chemicals, and reduced the amount of hazardous waste requiring costly disposal.

### Financial Analysis

912 Auto Center used 60 gallons of Naked Gun Cleaner® on average per year. Each 5 gallon drum cost \$120, totaling \$1,440 in material purchasing costs per year. To pre-clean very dirty guns, 912 Auto also used 120 gallons of Lacquer Thinner on average per year. Each 5-gallon drum cost \$52, totaling \$1,248 in material purchasing costs per year.

Both the waste gun cleaner and waste lacquer thinner had to be sent off site as hazardous waste. The cost was \$350 every six months for shipment and disposal, totaling \$700 per year in waste disposal costs.

The new product cost \$189 for one, 5-gallon drum and no waste has been generated to date. The same 5 gallons of product purchased six years ago are still in use at the shop, making the current cost per year \$31.50 for the product. When the material ultimately needs to be replaced, the waste solution will need to be evaluated for status as hazardous waste but, in the manufacturer's experience, is not likely to incur a hazardous waste disposal fee.

Product	Use	Cost	Total	Annual Savings
Naked Gun Cleaner®	60 gal/year	\$120/5 gal drum	\$1,440/year	
Lacquer Thinner	120 gal/year	\$52/5 gal drum	\$1,248/year	
Hazardous Waste Disposal		\$350/6 months	\$700/year	
Acrastrip®	5 gal/6 years	\$189/5 gal drum	\$31.50/year	\$3,356.50

Comparing past costs of \$1,440 per year for the Naked Gun Cleaner®, \$1,248 per year for lacquer thinner product, and \$700 per year for waste disposal costs, against \$31.50 per year using Acrastrip®, this change in material has resulting in a net savings of \$3,356.50 per year. This is a significant savings for 912 Auto Center's operating budget.

At the same time that 912 Auto switched to the Acrastrip® gun washing system, they also purchased a new Herkules™ gun washing machine to use with the water-based paints for \$1,000. Including this one-time cost in the equation, the shop still saw a payback period of less than four months. However, a new machine was not required and most shops use Acrastrip® in their existing gun washing machines.

### Performance

According to Dossantos, the Acrastrip® product performs better than the old solvent. He states that where he would previously have to wash a gun multiple times, a single 5 minute wash with Acrastrip® gets the guns completely clean. Acrastrip® is also easier to use and, because it is not a volatile organic compound, there are no objectionable odors emitted and there is less risk to workers. 912 Auto now has a safer and more pleasant working environment. With no hazardous chemical exposure concerns the shop workers do not have to wear respirators when using the gun washer, although they do choose to wear dust masks when cleaning guns as a simple precaution. Overall the staff is very happy with the performance and ease of use of the new gun washing system.

### Paint Conversion

When setting up his Dorchester shop, Dossantos also chose to switch from solvent-based paints to water-based paints. This conversion completely eliminated the use of paint reducer, a solvent formulation used to mix paints and to improve the paint spread and drying characteristics. The reducer used by 912 Auto contained:

- acetone
- naphthalene
- toluene
- xylene

These and other chemicals in the paint reducer are harmful to the environment and human health (as described previously).

When using the reducer, Dossantos would often feel dizzy. He commonly used 1 gallon of reducer per car, and painted up to 10-15 cars a week, a total of 780 gallons per year. Instead of using a reducer, he now mixes pigment and colors with water. He no longer feels dizzy, and there are no strong odors when mixing or spraying the water-based paint. Dossantos feels better about his own health and the care he takes of the environment.

Eliminating the cost of the paint reducer covered the increased cost of the water-based paints. Therefore, 912 Auto's costs to paint a car have not increased as a result of this process change.

As part of the paint conversion Mr. Dossantos purchased a new spray booth that included a hot air pressure system to dry the water based paint. The new booth cost approximately \$60,000. Although he would have had to purchase and install a new booth as part of the move to the new facility, this still represented a significant investment by Dossantos, and one that was influenced by his commitment to creating a safer and healthier work environment.

The shop has been very happy with their conversion to water-based paints and believes that they have received a reasonable pay back on the investment. Solvents remain in the primer and top coat used at the facility because these products are not yet available in water-based formulations.

## 912 Auto Center

is located at 113 Norfolk Street in Dorchester, MA. The shop (building and operations) is owned by Larry Dossantos. Two full time employees work in the 3,800 square foot shop. 912 Auto Center provides automobile body work including frame work, collision work, and painting. The shop works on an average of 10 - 15 cars each week.



*"My business (is) a safer and healthier place of work, not just for me but for my employees and my customers as well."*

*"I am happy with the water-based technology and am eager to show other businesses that it is possible and profitable to move toward more environmentally friendly chemicals and technologies."*

Larry Dossantos, Owner  
912 Auto Center, Dorchester