

## Restorative Ionized Air Wash

### History

When major fire damage occurred at the Guildford Town Centre in Vancouver, BC, Canada on Christmas Day in 1993, most of the retail stores received smoke damage to their entire inventories, the majority of which were clothing items. Faced with the possibility of huge losses of non-restorable merchandise at one of Canada's largest shopping malls, a proposal by Cromwell Restoration Ltd. of Vancouver, Canada to design and fabricate North America's first Restorative Air Washing system for garments was well received by the insurers. In the days that followed the fire, Cromwell's technicians treated the damaged garments and successfully returned them to undamaged condition by removing the contaminants embedded in the fabric weave. By capturing and collecting the source of odor and discoloration without leaving any residue the articles could be sold as new, undamaged merchandise. The project was a success and restoration cost was a small percentage of replacement cost. Additionally, costly business interruption was minimized, as the retailers were able to sell the inventory on hand without waiting for new product from their suppliers. The development of Cromwell's Restorative Air Wash system provided a new opportunity to recover materials previously thought to be unrestorable.

### Development

Since the Guildford fire, Cromwell Restoration's Air Washing technique has been refined and modified many times, the most significant modification being the adaptation to structure cleaning following smoke or soot contamination, or exposure to industrial or pollutant materials. A further innovation involving ionization of the filtered air stream provided a means of loosening adhered particulate by altering the magnetic properties of the contaminant. Cromwell's Restorative Ionized Air Wash procedure has to date saved building owners and insurance companies millions of dollars, as materials and interior finishes previously deemed unrestorable have been fully restored at a small fraction of replacement cost.

### Process

In addition to obvious visible contaminants, microscopic carbon based bi-products of combustion can cause discoloration either by blocking the transmission of light reflection to the human eye, or by altering surface texture to affect light reflection. Additionally these foreign materials continue to contaminate the indoor environment as air currents deliver oxidants to the olfactory gland where they register as an odor. Air washing is accomplished by dry washing with a controlled flow of filtered, ionized air at variable pressure and velocity. Particulate is ionized, altering the static properties, and lifted away from the surface, by a laminar flow of purified air. While airborne, the contaminant is drawn into a specially designed negative air extraction system and is trapped in a series of high efficiency filters which can include HEPA and activated charcoal. Cromwell's Air Wash systems now range in size from small portable units designed for use in residential homes, to large trailer mounted systems engineered for industrial applications.

### Conclusion

Here are some examples of successful Air Wash Restoration projects:

- Royal BC Museum, Victoria, BC — interior of 120,000 square foot facility exposed to smoke, over ten million exhibit items restored, including fabrics, conserved trees and botanics, and taxidermy. A large portion of the exhibit dated circa 1800
- Building materials store, Edmonton, AB — structure and majority of a \$12 million inventory restored
- Clothing wholesaler, Richmond, BC — 90% of \$2 million inventory restored
- Food products wholesaler, Richmond, BC - \$1 million inventory of food stuffs restored
- Aldolphis Hotel, Dallas, TX — interior finishes of a heritage hotel restored

These are a few notable projects; however the Air Wash process is put to the test on small jobs as well. Recently Cromwell technicians utilized Restorative Ionized Air Wash to clean and restore delicate silk wall covering, previously thought to be unrestorable by any known cleaning method, as the silk fibers would be permanently altered and would readily absorb oils and moisture from the mere touch of a human hand. In some industrial applications of Air Wash the cost is considerably less than conventional cleaning processes. In situations where there is no other viable cleaning method, the cost usually represents a small fraction of replacement.

Future applications of Cromwell's Restorative Ionized Air Wash Process will include the many new building materials and finishes being introduced by architects and designers. A primary advantage of this unique process is the ability to perform restorative cleaning without the addition of degreasers, detergents or particulate encapsulants to our indoor environment.

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