Mary Scalco, Drycleaning & Laundry Institute

DRYCLEANING:
PAST, PRESENT & FUTURE
“Dry” cleaning is not a dry process.

Utilizes solvent liquids that are circulated through the clothes to dissolve and lift dirt, grease and oils.

Mixture of dirt and solvent is removed, distilled and filtered so solvent can be reused.
INDUSTRY STATISTICS*

- 38,755 establishments
- Employs ~ 164,500 individuals
- $9.0 Billion
- Comprised of mom & pop establishments, few national chains
- Industry was shrinking, revenue declined 2.6% annually 2008-2013
- 80% revenue is from individual households

* IBIS World Industry Report, November 2013
HISTORY DRYCLEANING SOLVENTS

- Late 19th Century—Turpentine spirits, benzene, naptha, kerosene, white gasoline.
- 1924-1928—Stoddard introduced
- 1934—Introduction of perc, carbon tet, trichloroethylene
- 1948—Perc is primary chlorinated solvent
- 1950—140 F hydrocarbon solvent developed
- 1962—Perc primary drycleaning solvent
- 1964—Fluorinated-chlorinated solvent (Valclene) introduced
- 1980—111 Trichloroethane makes brief appearance
HIGH FLASHPOINT HYDROCARBONS

- Mid-1990’s—First high flashpoint hydrocarbon solvent, DF 2000, introduced
- Isoparaffinic hydrocarbons
  + Mixtures of C8 to C12 napthenic, aromatic & paraffinic compounds
  + 2% Aromatic
- High flashpoint solvents in addition to DF 2000
  + Eco Solv
  + Shell Sol D-60
  + Drylene 800
  + Ensolv
ENHANCED HYDROCARBONS

- Raise the flashpoint
- Boost cleaning capabilities
- Options
  - Pure Dry—hydrofluoroether (HFE), perfluorocarbon (PFC)
  - Impress & Gen-X—aliphatic glycol ethers
ADD’L SOLVENT OPTIONS

- GreenEarth—silicone based, D-5
- Solvon K-4—Dibutoxymethane/Butylal
- Liquid CO2 & later Solvair (glycol butyl ether & CO2)—machines no longer available
- DrySolv (npB)—limited use
- Rynex (glycol ether)—limited use, 3rd rendition
TODAY’S SOLVENT USE

- Perc 50-60%
- High Flash Hydrocarbon 40-50%
- GreenEarth 5-10%
- Solvon K4 5-10%
- Others < 5%
WETCLEANING

- Not a viable 100% replacement to solvent processing
  + Production costs
  + Processing time
- Adjunct to solvent processing a necessity
Transfer Machines
Separate washer and dryer
TODAY’S DRYCLEANING MACHINE TECHNOLOGY

Dry to Dry non-vented
• Tank holds the solvent
• Pump draws solvent into perforated stainless steel cylinder
• Solvent circulated through the cylinder
• Solvent goes through button trap to tank
• After washing solvent is drained & clothes spun
• After drying the solvent is distilled and returned to the tank
• New machines are completely enclosed
REGULATORY CONCERNS FOR PERC ALTERNATIVES

- All combustible to some degree
- Most VOC’s
- Most have no known health concerns
- Some have environmental concerns
- None have hazardous waste issues—although industry recommends treat waste as hazardous
- None have discharge concerns—although industry recommends limiting discharge
CLEANING PERFORMANCE FOR PERC ALTERNATIVES

- None perform as well as perc in terms of cleaning capability
- All provide adequate cleaning capability especially when combined with adequate detergents
- Some provide processing capabilities for additional types of garments—fragile, dye sensitive, “fancy”
PRODUCTION COMPARISON FOR PERC ALTERNATIVES

- All require extended processing time as compared to perc
- Spotting, finishing, assembly labor is only minimally increased, if at all
- Utility consumption is comparable
<table>
<thead>
<tr>
<th></th>
<th>GreenEarth GreenEarth Cleaning</th>
<th>Hydrocarbon R.R. Street &amp; Co.</th>
<th>Solvex K4 Kreussler</th>
<th>Fees Dow</th>
<th>Rynex Adco</th>
<th>Geon Caled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle Length (Minutes)</td>
<td>60</td>
<td>2 Bath - 35-65</td>
<td>2 Bath - 70 min</td>
<td>45</td>
<td>74</td>
<td>35-60</td>
</tr>
<tr>
<td>Wash Time (Minutes)</td>
<td>17</td>
<td>18-20</td>
<td>7-10</td>
<td>15-20</td>
<td>7.5</td>
<td>4-8</td>
</tr>
<tr>
<td>Drying Time (Minutes)</td>
<td>35</td>
<td>28</td>
<td>48 w/cool down</td>
<td>30-35</td>
<td>60</td>
<td>23-30</td>
</tr>
<tr>
<td>Is a Specific Machine Required?</td>
<td>Class IIIA</td>
<td>Class IIIA</td>
<td>Class IIIA vacuum still</td>
<td>Class IV</td>
<td>K Series Class IIIA</td>
<td>Class IIIA</td>
</tr>
<tr>
<td>Fees/Licenses</td>
<td>$2,500 – Annual</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Proprietary products Required?</td>
<td>Many approved products available. Top Brands</td>
<td>No</td>
<td>Yes, Kreusser Products</td>
<td>No</td>
<td>Booster Sizing</td>
<td>No</td>
</tr>
<tr>
<td>Average Cost Per Gallon</td>
<td>$21-$24</td>
<td>$13.95</td>
<td>$30.70</td>
<td>$23</td>
<td>$36</td>
<td>$29.41</td>
</tr>
<tr>
<td>Average Solvent Mileage (Pounds cleaned per Gallon)</td>
<td>1,500</td>
<td>1,500 to 1,800 Standard Class IIIA</td>
<td>4,500 minimum of .5% weight of load</td>
<td>750 to 1,000</td>
<td>3,000+</td>
<td>800 to 1,100</td>
</tr>
<tr>
<td>Recommended Waste Disposal*</td>
<td>Licensed waste hauler</td>
<td>Appropriate waste hauler</td>
<td>Licensed waste hauler</td>
<td>Licensed waste hauler</td>
<td>Regular waste hauler</td>
<td>Non-hazardous municipal waste</td>
</tr>
<tr>
<td>Number of Machines in U.S.</td>
<td>More than 900 U.S. 1,700 global</td>
<td>10,000+ U.S. 450 global</td>
<td>200 U.S.</td>
<td>36,000 U.S.</td>
<td>10 U.S. 13 global</td>
<td>800 U.S. 1,000 global</td>
</tr>
<tr>
<td>Any Major Issues?</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Proper handling and disposal; Restrictions on location; Special reporting &amp; Permitting</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
THANK YOU

Questions & Answers

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