

Potential to Emit Calculations for Dry Cleaning

Equipment: One (1) Electric Powdered Perchloroethylene Dry Cleaner (Dry-to-Dry Process) with a capacity of 80 lbs clothing/hr.

One (1) DF 2000 Solvent Dry Cleaner (Dry-to-Dry Process) with a capacity of 95 lbs clothing/hr.

Calculations:

The emissions for this company are based on the following assumptions.
AP-42 Emission Factors (Table 4.1-1)

Capacity: 80 lb clothing/hr Perchloroethylene Dry-to-Dry

- 1 lb Perchloroethylene/100 lb of clothes cleaned (Filter Disposal)
- 0.5 lb Perchloroethylene/100 lb of clothes cleaned (Still Residue Disposal)
- 3 lb Perchloroethylene/100lb of clothes cleaned (fugitive, Pumps, and Pipes)
- 4.5 lb Perchloroethylene/100 lb of clothes cleaned** (Total)

Capacity: 95 lb clothing/hr Stoddard Dry-to-Dry Process

- 1 lb DF 2000 Solvent/100 lb of clothes cleaned (Filter Disposal)
- 0.5 lb DF 2000 Solvent/100 lb of clothes cleaned (Still Residue Disposal)
- 3 lb DF 2000 Solvent/100lb of clothes cleaned (fugitive, Pumps, and Pipes)
- 4.5 lb DF 2000 Solvent/100 lb of clothes cleaned** (Total)

		<u>Emission Factor Rating</u>
Electric Powered	Dry-to-Dry	B
Perchloroethylene Dry Cleaner		
Df 2000 Solvent Dry Cleaner	Dry-to-Dry	B

*The emission factor for the transfer process includes both the washer and dryer.

*Perchloroethylene is not considered to be a VOC according to Regulation 1.02 Section 1.79.24

For Perchloroethylene Machines:

Filters are typically cleaned every 300-500 hrs of operation. The district will assume that the machine will be shut down every 1000 hrs of operation for 24 hrs at a time to replace the filters, since 40 CFR 63.322 (Subpart M) requires the filter to drain for 24 hrs before disposal; during which the machine cannot be used.

$$(8760 \text{ hr/yr}) / (1000 \text{ hrs/filter change}) = 9 \text{ shutdowns/yr}$$

$$\text{Total operating hours: } 8760 - (9 \text{ shutdowns/yr} * 24 \text{ hrs}) = 8544$$

Total amount of clothing cleaned in the Perchloroethylene machines: 80 lbs/hr

For Stoddard Machines:

Assuming the machines will follow regulations similar to Title 40 CFR 60.622 (Subpart JJJ)

$(8760 \text{ hr/yr}) / (1000 \text{ hrs/filter change}) = 9 \text{ shutdowns/yr}$

Total operating hours: $8760 - (9 \text{ shutdowns/yr} * 8 \text{ hrs}) = 8688$

Total amount of clothing cleaned in the Stoddard machines: 95 lbs/hr

PTE for VOC:

DF 2000 Solvent (Dry-to-Dry Process):

$(4.5 \text{ lb /100 lb of clothing})(95 \text{ lb clothes/hr})(8688 \text{ operating hr/yr})(1 \text{ ton/2000 lb})$
 $= 18.57 \text{ tpy}$

Spot Cleaning for Perchloroethylene:

$(0.1 \text{ ounce/lb of clothing})(80 \text{ lb clothes/hr})(8544 \text{ hr/yr})(1 \text{ gal/128 ounces})(7 \text{ lb/gal})$
 $(1 \text{ ton/2000 lb}) = 1.87 \text{ tpy}$

Spot Cleaning for Stoddard:

$(0.1 \text{ ounce/lb of clothing})(95 \text{ lb clothes/hr})(8688 \text{ hr/yr})(1 \text{ gal/128 ounces})(7 \text{ lb/gal})$
 $(1 \text{ ton/2000 lb}) = 2.26 \text{ tpy}$

Total = 18.57 tpy + 1.87 tpy + 2.26 tpy = 22.7 tpy

PTE for Single HAP (Perchloroethylene):

Electric Powered Perchloroethylene (Dry-to-Dry Process):

$(4.5 \text{ lb /100 lb of clothing})(80 \text{ lb clothes/hr})(8544 \text{ operating hr/yr})(1 \text{ ton/2000 lb})$
 $= 15.38 \text{ tpy}$

Total = 15.38 tpy

PTE for Total HAP:

Electric Powered Perchloroethylene (Dry-to-Dry Process):

$(4.5 \text{ lb /100 lb of clothing})(80 \text{ lb clothes/hr})(8544 \text{ operating hr/yr})(1 \text{ ton/2000 lb})$

Total = 15.38 tpy