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Dow  
09/25/02



## Drycleaning Industry Trends

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NIOSH Perc Forum, Cincinnati, OH

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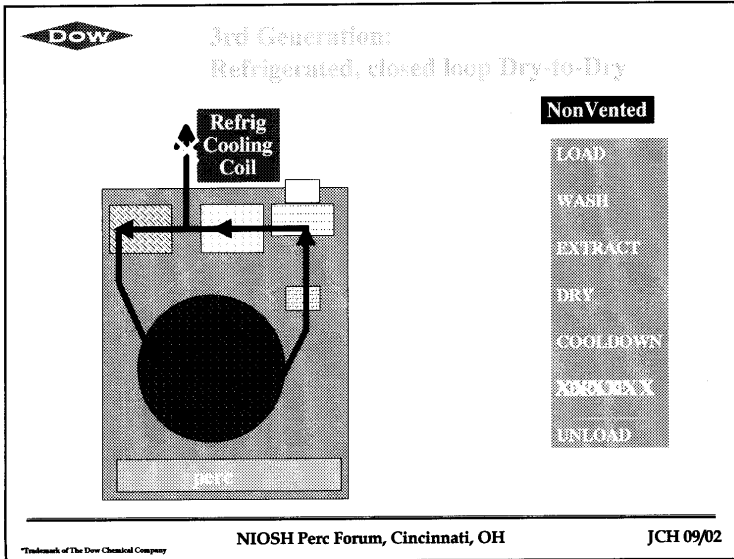
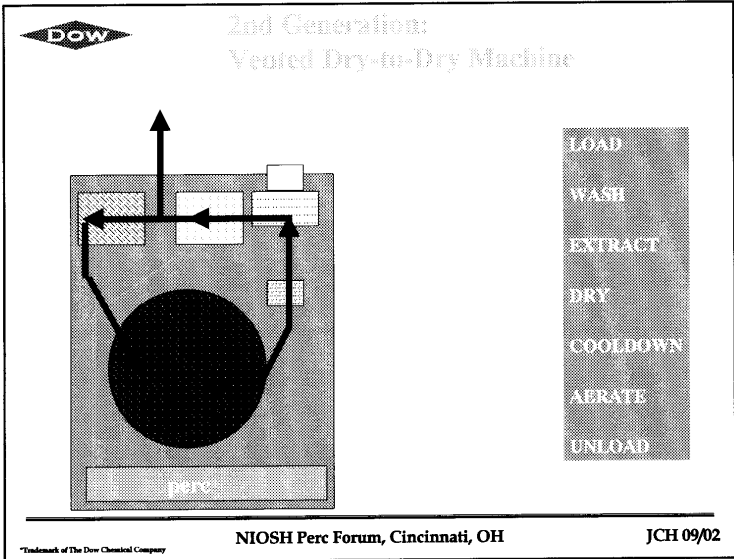
## Discussion Topics

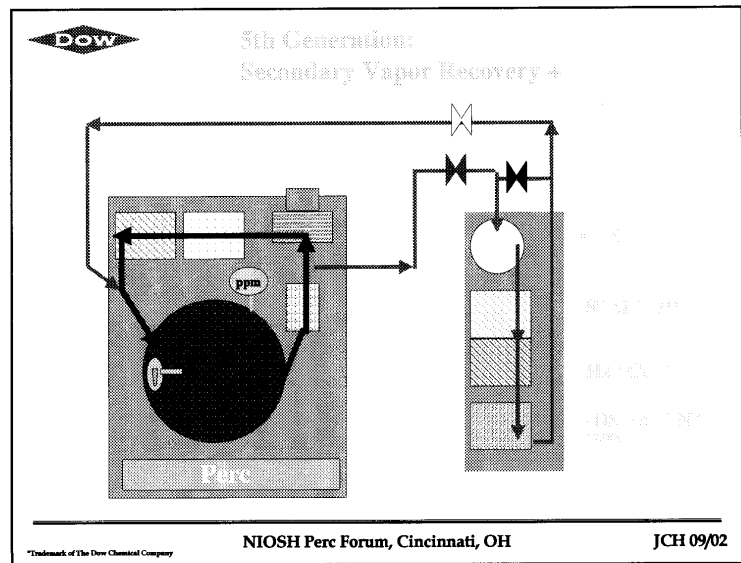
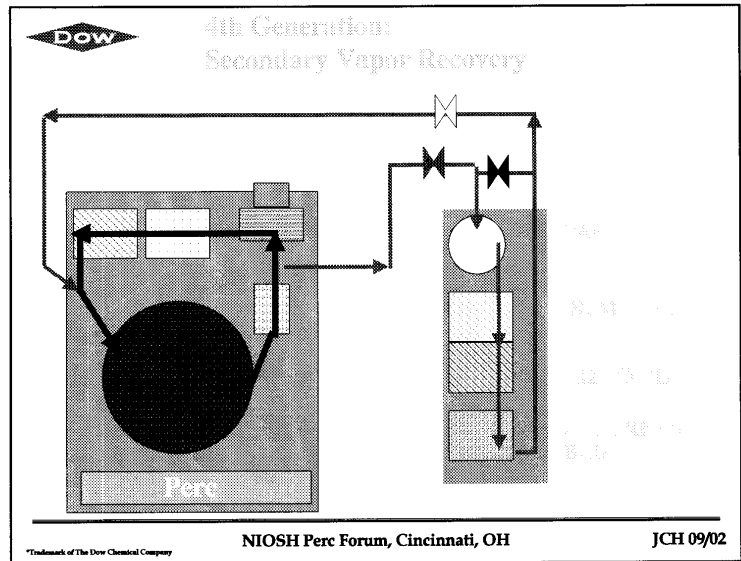
- Review of Perc Drycleaning Equipment Technologies
- Worker Exposure Data
  - Skory Consulting, Inc data
- State Programs
- Equipment Survey Data
- Impact on Perc Consumption

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### Perc Emissions and Demand Based on Equipment Technology

lbs Perc / 1000 lbs Clothes Cleaned

Technology	Fugitive	Waste	Total Demand
1st Generation	68	14	82
2nd Generation	20	14	34
3rd Generation	5	13	18
4th/ 5th Generation	~4	6*	10

\* Reduction in waste due to standard offering of disc filters vs. cartridge filters

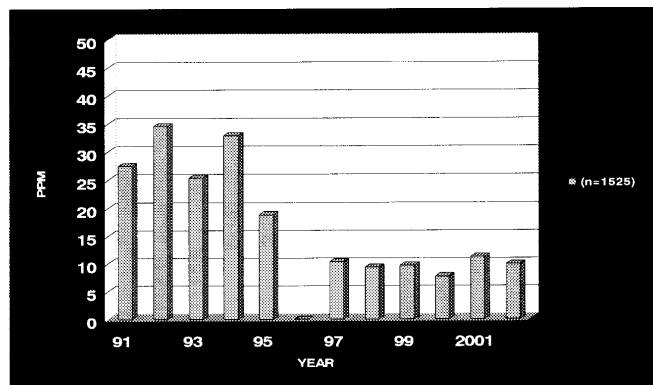
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### Average Perc Exposure by Year



Dow Chemical Co. Vapor Monitor Program. Data through 7/02

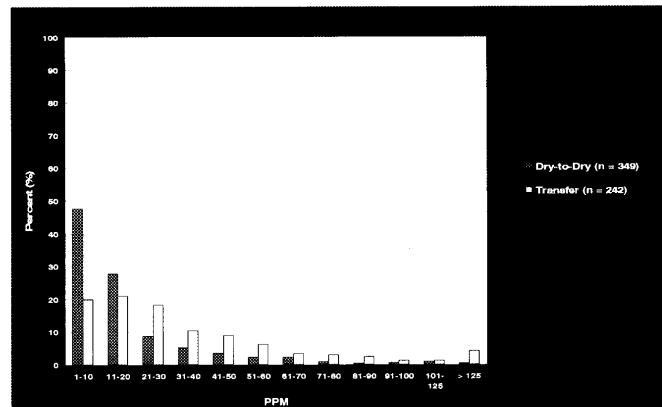
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### 1989-1996 Drycleaning Vapor Monitoring Results: Equipment Comparison Summary



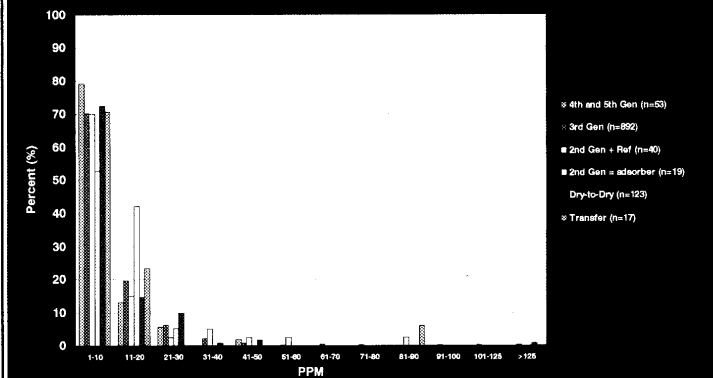
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### 1997-2002 Drycleaning Vapor Monitoring Results: Equipment Comparison Summary



Dow Chemical Co. Vapor Monitor Program. Data through 7/02

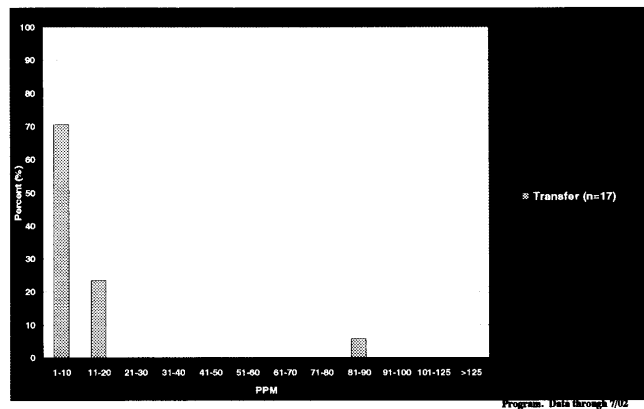
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### 1997-2002 Drycleaning Vapor Monitoring Results: Transfer



Program. Data through 7/02

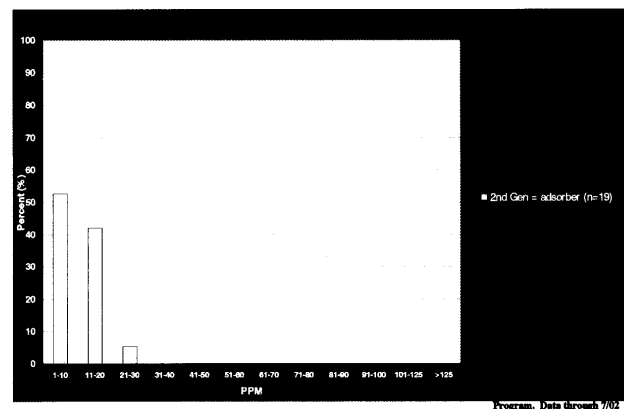
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### 1997-2002 Drycleaning Vapor Monitoring Results: 2nd Generation + Adsorber



Program. Data through 7/02

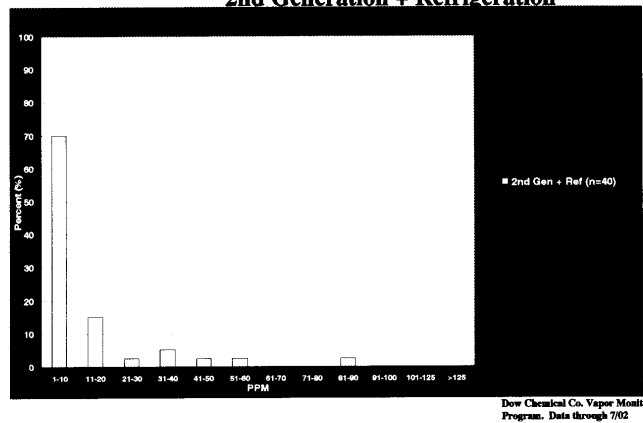
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### 1997-2002 Drycleaning Vapor Monitoring Results: 2nd Generation + Refrigeration



■ 2nd Gen + Ref (n=40)

Dow Chemical Co. Vapor Monitor Program. Data through 7/02

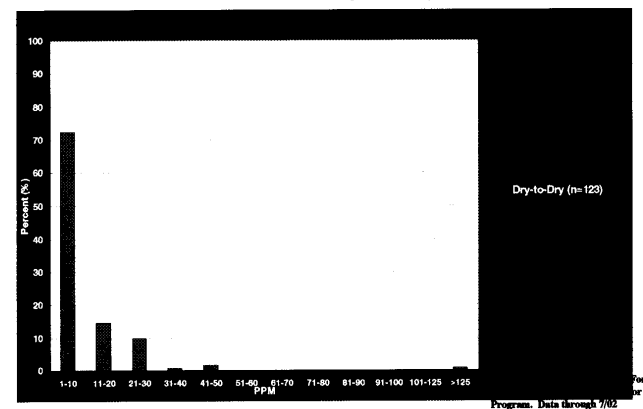
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### 1997-2002 Drycleaning Vapor Monitoring Results: Dry-to-Dry



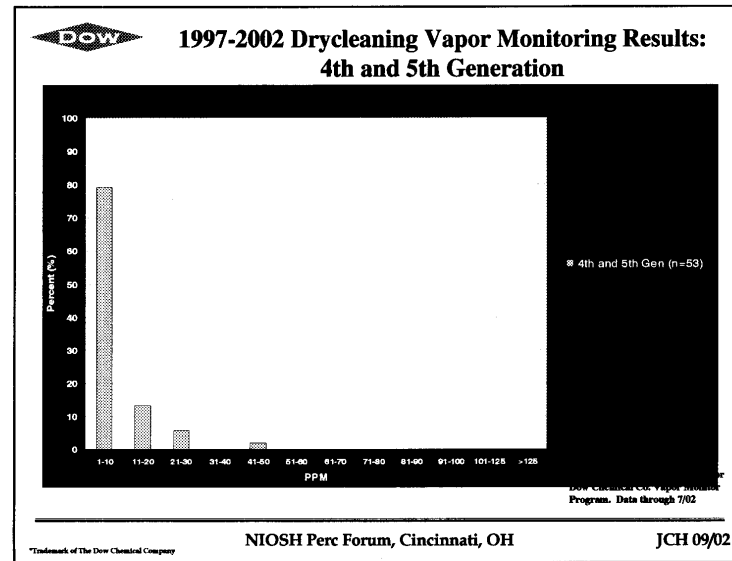
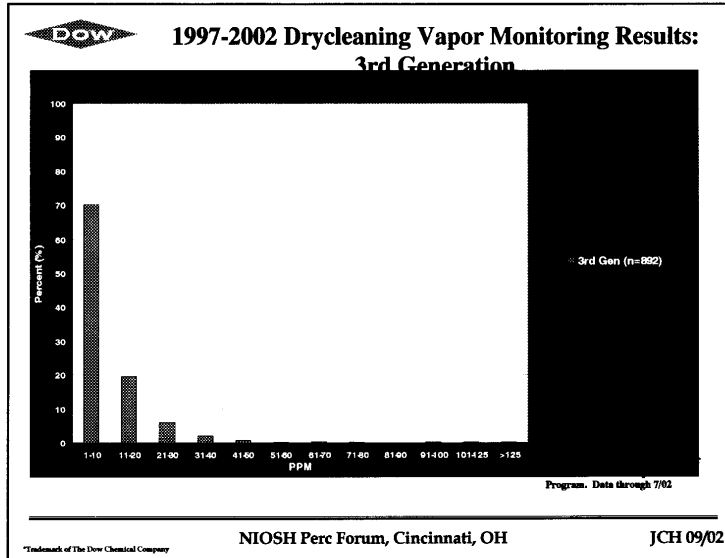
■ Dry-to-Dry (n=123)

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## State Programs

- Clean up legislation passed in several states:
  - AL, AZ\*, CT\*, FL, IL, KS, MN, MO, NC, OR, SC, TN, WI
  - Key elements:
    - Programs are generally similar to gasoline station clean up programs
    - Funding structure: solvent fees, licensing fees, environmental surcharge on all garments cleaned
    - Regulatory implementation includes pollution prevention practices beyond current federal requirements
    - Direct and indirect “incentive” to utilize newer generation equipment
- New York (~ '99) and California (~ '94) state Air Regulations require “newer” equipment technologies

All result in positive added benefit of reducing worker exposure

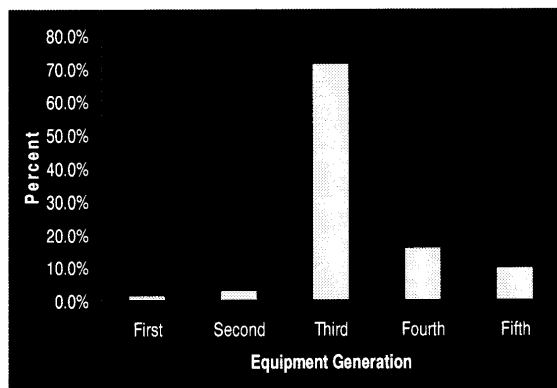
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## Drycleaning Equipment Profile (n=4,293)



Survey conducted 2000, Reported to OSHA by HSA 2000

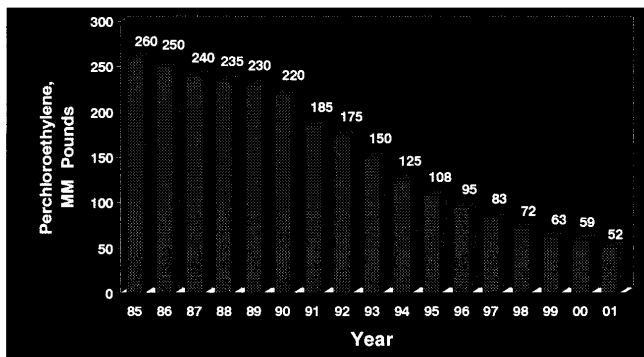
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## Perchloroethylene Demand in US Drycleaning Industry



Source: TCATA Annual Survey, Piers Import Estimate

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## Conclusions

Worker exposure to perc in the drycleaning industry is being significantly reduced

- Newer, more efficient, perc equipment technology reduces potential for worker exposure by reducing emissions
- Industry data shows drycleaners are converting to more efficient equipment
- State programs for drycleaning site remediation are an additional driver to accelerate purchase of efficient equipment
- Impact is clearly demonstrated by reduction in both perc consumption by the industry and in vapor monitor exposure measurements

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