



GreenChill Advanced Refrigeration Partnership



EPA & the Supermarket Industry:
Partners in Ozone Layer Protection

Agenda

- ▶ **Reasons to Partner with EPA**
- ▶ **Supermarket refrigeration**
- ▶ **GreenChill Advanced Refrigeration Partnership**



EPA Partnership Programs

- ▶ **More than 80 environmental partnership programs**
- ▶ **Voluntary participation**
- ▶ **No membership fee**
- ▶ **Non-regulatory**
- ▶ **Gives you a friendly face at the EPA**
- ▶ **True partnership attitude – bundling?**



Partner with EPA for Cost Savings

- ▶ **Reduce waste/leaks & conserve resources**
 - ▶ **Utilities:** solid waste, water, energy
 - ▶ **Materials:** refrigerant, plastic, building materials
- ▶ **Increase efficiency & productivity**
 - ▶ **Easier to manage environmental compliance**
 - ▶ **Less employee time spent dealing with waste**
 - ▶ **Streamlined processes**
 - ▶ **Less time reinventing the wheel**
 - ▶ **Specialized software to track environmental performance**



Partner with EPA for Public Recognition

- ▶ **Awards & positive press coverage**
 - ▶ Press releases on your achievements
 - ▶ National coverage
- ▶ **Enhanced reputation**
 - ▶ EPA credibility “confirms” your environmental achievements
 - ▶ Enhanced corporate image with customers, regulators, & media
- ▶ **Brand protection**
- ▶ **Logos that help distinguish you from competitors**



Partner with EPA to Reduce Business Risk

- ▶ Reduce regulatory compliance costs
- ▶ Reduce liability
- ▶ Prevention of environmental problems
- ▶ Voluntary today – regulatory tomorrow?



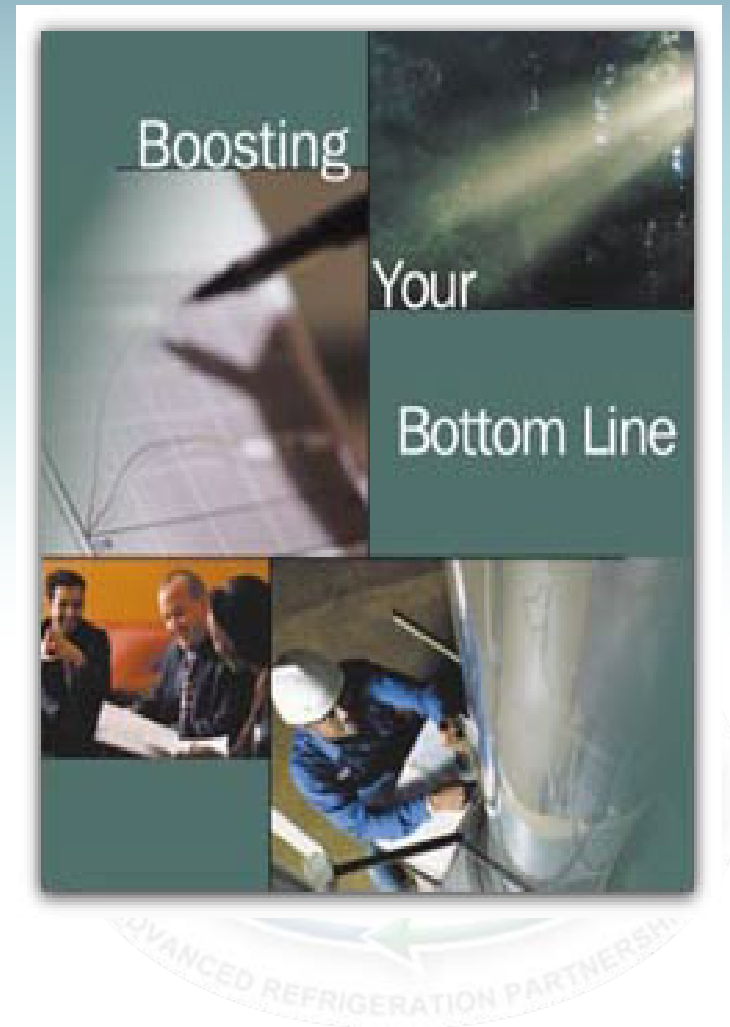
Partner with EPA for Strategic Planning

- ▶ **Environmental performance benchmarking**
- ▶ **Preparation for regulatory developments**
- ▶ **Technical assistance**
 - ▶ Access to EPA's nationwide resources and contacts
 - ▶ Unbiased source of research and technical analysis
 - ▶ Best practice guidelines, lessons learned, implementation road maps
- ▶ **Networking**
 - ▶ Partner meetings to share best practices, strategies, cost savings opportunities
 - ▶ Conferences, workshops, seminars



Partners for the Environment

- ▶ www.epa.gov/partners
- ▶ **Achievement Through Partnership: A Progress Report Through 2000**
- ▶ **Boosting Your Bottom Line**
- ▶ **Guide to EPA Climate Partnership Programs**



Supermarket Refrigeration

- ▶ **R-22 is primary refrigerant**
 - ▶ Harms the ozone layer (ODP of .055)
 - ▶ Contributes to climate change (GWP of 1500)
 - ▶ Phase-out in 2010 of R-22 production for new equipment; Limited production allowed until 2020 to service existing refrigeration equipment
- ▶ **DX systems are the dominant technology**
 - ▶ Lg. refrigerant charges (ave. spmkt. = 4000 lbs.)
 - ▶ High leak rates (ave. 20-25% = about 1000 lbs. of refrigerant emitted **PER SUPERMARKET** per year)



GreenChill Advanced Refrigeration Partnership

- ▶ **An EPA cooperative alliance with the supermarket industry**
- ▶ **Promotes the adoption of advanced refrigeration technologies, strategies, and practices**
- ▶ **Reduce charges & emissions of ozone-depleting substances (potent greenhouse gases)**
- ▶ **Help protect the ozone layer and protect against global warming**



GreenChill Priorities

- ▶ **Shift from DX systems to advanced refrigeration systems**
- ▶ **Shift from HCFC-22 to substitute refrigerants**
- ▶ **Promote reduced refrigerant charges**
- ▶ **Promote equipment leak tightness**
 - ▶ **At production**
 - ▶ **At installation**
 - ▶ **Preventative maintenance**



Why advanced refrigeration technology?

- ▶ Montreal Protocol's goal is ozone layer recovery – reduces ozone-depleting substances (CFCs & HCFCs)
- ▶ Substitute refrigerants (HFCs) are ozone-safe, but they are greenhouse gases
- ▶ Leaking 1000 pounds of greenhouse gas instead of 1000 pounds of ozone-depleting gas is substituting one environmental disaster for another



GreenChill Supermarket Partners



GreenChill Supermarket Partners

- ▶ Acme Markets
- ▶ Albertsons
Intermountain West
- ▶ Albertsons/Lucky
Southern California
- ▶ bigg's
- ▶ Cub Foods
- ▶ Farm Fresh Food &
Pharmacy
- ▶ Food Lion
- ▶ Giant Eagle
- ▶ Hannaford
- ▶ Harris Teeter
- ▶ Hornbacher's
- ▶ Jewel/Osco
- ▶ Price Chopper
- ▶ Publix
- ▶ Shaw's/Star Markets
- ▶ Shop 'n Save, St. Louis
- ▶ Shoppers Food &
Pharmacy
- ▶ Supervalu Inc.
- ▶ Whole Foods



Advanced Refrigeration Systems Manufacturers

HUSSMANN[®]



 **KYSOR** // **WARREN**[®]

Hill PHOENIX[®]
E X C E L L E N C E

A **DOVER**[™] COMPANY



Chemical Manufacturing Partners

INEOS Fluor



Honeywell



Benefits of Joining GreenChill

- ▶ **Benchmarking to evaluate progress**
- ▶ **Recognition for actions beyond regulatory requirements**
- ▶ **Build brand equity**
- ▶ **Tools to attain corporate environmental stewardship and sustainability goals**
- ▶ **Prepare for HCFC phaseout and other deadlines**
- ▶ **Access to latest information on state-of-the-art refrigeration technologies, alternative refrigerants, and best practices**
- ▶ **Networking & information sharing among partners**



Supermarket Partner Responsibilities

- ▶ **Commit to using only non-ozone-depleting refrigerants in both newly constructed stores and major remodels**
- ▶ **Report a baseline of corporate-wide refrigerant stocks and emissions**
- ▶ **Commit to an annual emissions reduction goal**
- ▶ **Develop a corporate Refrigerant Management Plan and emissions reduction strategy**
- ▶ **Report annual aggregate corporate-wide refrigerant stock and emissions**



GreenChill Projects 2008

- ▶ **Best practices**
 - ▶ Retrofit guidelines
 - ▶ Advanced refrigeration technology guidelines
- ▶ **Reporting/partner goals/benchmarking**
 - ▶ Supermarket emissions data
 - ▶ Equipment manufacturer leak tightness
 - ▶ HCFC-22 reclamation
- ▶ **Research**
 - ▶ Energy efficiency theoretical study
 - ▶ Pilot projects
- ▶ **Marketing/Recruiting**



Retrofit Best Practice Guidelines

- ▶ **Retrofits = most widespread strategy to prepare for HCFC-22 phaseout in existing stores**
- ▶ **Opportunity to reduce leaks**
- ▶ **GreenChill Retrofit Best Practices Guidelines**
 - ▶ **Leak tightness improvements during retrofits**
 - ▶ **Conversion checklists**
 - ▶ **Best practices for handling recovered HCFC-22**
 - ▶ **Case studies**



Best Practices Guidelines

Advanced Refrigeration Technology

- ▶ **Describes and explains alternatives to conventional DX systems**
- ▶ **Factors to consider when selecting an advanced refrigeration option**
- ▶ **Best practices to reduce refrigerant charge**
- ▶ **Best practices for leak tightness at production and installation**
- ▶ **Service and maintenance best practices for leak tightness**
- ▶ **Case studies**



Supermarket Partner Data Reporting

▶ Baseline year 2007

- ▶ GreenChill supermarket partners average leak rate about 15% vs. industry average of 25%
- ▶ Wide range even among GreenChill partners 8%-25%

▶ Goals for 2008

- ▶ Many want to reduce emissions by 5% per year, lack of a benchmark
- ▶ Plans include retrofits to existing stores, new construction with advanced refrigeration technology, leak tightness strategies

▶ Data reporting for 2008 by March 31, 2009



Benchmarking to Measure Progress

- ▶ **Compare leak rates to previous years**
- ▶ **Compare leak rates to GreenChill average**
- ▶ **Compare leak rates to nationwide average**



Equipment Manufacturing Partner Data Reporting

- ▶ **Equipment leak tightness at production**
- ▶ **Equipment leak tightness at installation**
- ▶ **Shipments of DX systems vs. advanced refrigeration systems**
- ▶ **Refrigerant used in all refrigeration systems shipped**



Chemical Manufacturing Partner Data Reporting

- ▶ **Baseline year and annual reporting of supermarket HCFC-22 and HFC recovery and reclamation**
- ▶ **Annual goal to increase supermarket HCFC-22 and HFC recovery and reclamation**
 - ▶ **Best practices for recovery and reclamation**
 - ▶ **Chemical manufacturer “Corporate Recovery & Reclamation Plan”**
 - ▶ **HCFC-22 end-of-life guidelines**
 - ▶ **Safety information**



HCFC-22 Reclamation

- ▶ Increase R-22 and HFC reclamation
- ▶ Best practices for recovery
- ▶ Best practices for reclamation
- ▶ Chemical manufacturer “corporate recovery & reclamation plan”
- ▶ R-22 end-of-life guidelines
- ▶ Safety information



Energy Efficiency Theoretical Study

- ▶ **Hurdle: supermarket industry fears advanced refrigeration technology uses more energy**
- ▶ **EPA theoretical study compared energy consumption of advanced refrigeration technologies to baseline DX technology**
- ▶ **Draft to be peer reviewed**
- ▶ **Publication as EPA document later in 2008**



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