

# “Fluorocarbons: Balanced Solutions For Society”

## Foam Insulation...A Working Example

### A Worldwide Perspective

There are 14 major types of insulating foams produced globally that are primarily used for appliance insulation, residential and commercial building insulation and specialty applications such as refrigerated storage, transport and pipe insulation. These products have used chlorofluorocarbons (CFCs), some are now using hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs) as the Montreal Protocol is implemented across all nations.

### HFCs – The Balanced Solution

As of March 1999, fluorocarbons (HCFCs and HFCs) have accounted for 60% of all approved CFC-11 replacement technology projects in insulating foams.

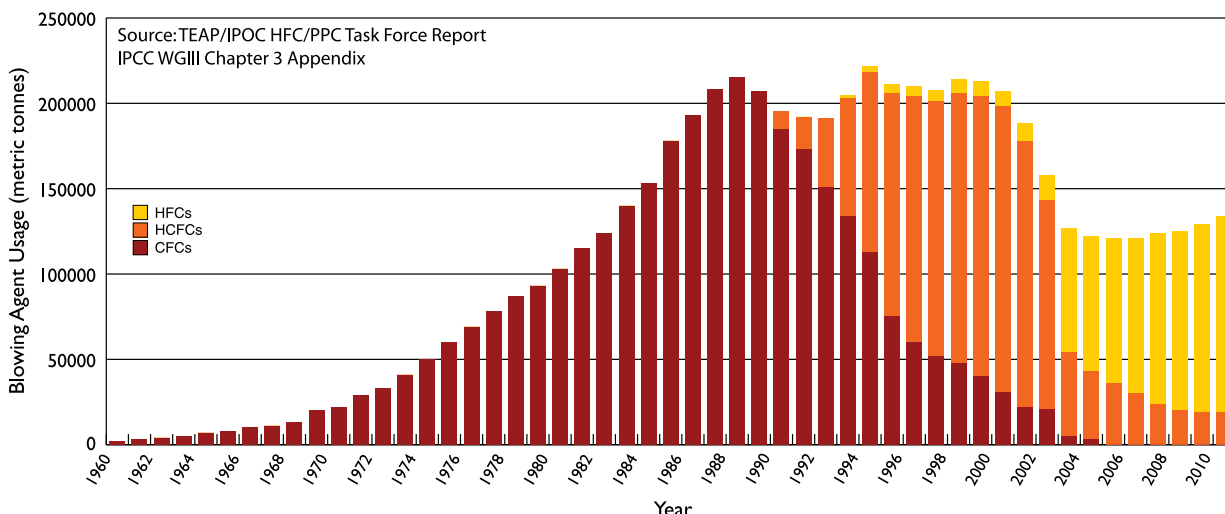
### Montreal Protocol Multilateral Fund Project Summary

Sector (Number of projects approved)	CFC-11 Tonnes Replaced Impact M.Tonnes	Replacement Technology (expressed in M. Tonnes of CFC-11 substituted)			
		HCFCs	HFCs	HCs	Others
Rigid Foam (238)	10938	7144	58	3003	733
Foam Insulation conversion only (34) The data does not include refrigerants	1998	636	0	849	513
	12936	7780	58	3852	1246

Commercially available throughout the world, HFCs are energy efficient, low in toxicity, cost-effective and can be used safely. They are truly useful compounds to manufacturers providing insulating foams that help save energy and reduce CO<sub>2</sub> emissions.

### CFC/HCFC/HFC Blowing Agents In Use Globally In Rigid Foams

The following graph shows the past and predicted global use of fluorocarbons in insulating foams.



## Life Cycle Climate Performance (LCCP)

Insulating foams save energy and reduce CO<sub>2</sub> emissions. In 1995, the building sector consumed approximately 34% of global energy, equating to 31% of global CO<sub>2</sub> emissions. An average increase in global building energy efficiency of 1% would reduce CO<sub>2</sub> emissions by 50-80 million metric tonnes annually.

Foam energy efficiency is heavily influenced by the choice of blowing agent. Non-ozone-depleting HFCs can currently produce 10-20% more efficient foams compared to other alternatives. Foams produced with HFCs also show superior LCCP. LCCP is the overall contribution to global warming of the manufacture, use and life of a blowing agent in a particular application. Energy efficiency considerations favor HFC use in most insulating foam applications.

### LCCP of Foam Boardstock Insulating Sheathing for Residential Wood Walls<sup>1</sup>

Greenhouse Gases, million metric tonnes CO <sub>2</sub> Equivalent	U.S.		Canada	
	Extruded Polystyrene Foams	Polyisocyanurate Foams	Extruded Polystyrene Foams	Polyisocyanurate Foams
Plastic mfg - energy	28	37	1.8	2.6
Plastic mfg - blowing agent	41	55	2.8	4.1
Avoided from annual energy savings	22	28	1.1	1.4
Greenhouse gas payback period, years	3.18	3.27	4.35	4.89
Avoided from 30-yr. energy savings	648	848	31.7	41.3
Net greenhouse gases saved	580	756	27.1	34.6

<sup>1</sup>Comparative Analysis of HFC and Alternative Technologies, A.D.Little, Inc. August 23, 1999

Manufacturing foam insulation consumes energy. However, these results show that energy saved far exceeds HFC manufacturing energy consumed, plus the direct blowing agent contribution.

## Industry Principles

The foam industry supports the following responsible stewardship for HFC technology:

- Provide technically feasible insulation products with favorable LCCP;
- Promote technology and processes that provide financially sound societal investments; and
- Minimize foam insulation manufacturing emissions, based on best available, affordable technology.

**Balanced Solutions for Society... Insulating Foams are a Perfect Example of The Concept.  
Energy Efficiency, Reduced CO<sub>2</sub> Emissions, Availability, Affordability.  
HFCs – the RIGHT Choice for Insulating Foams.**

The Alliance for Responsible Atmospheric Policy is a leading industry voice that coordinates industry participation in the development of reasonable international and U.S. government policies regarding ozone protection and global climate change.



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