

# Chilling\*Facts

## THE BIG SUPERMARKET REFRIGERATION SCANDAL



### BACKGROUND

#### Climate change threat

Supermarket refrigeration is making a worrying contribution to climate change. About one quarter of the carbon footprint of supermarkets comes from the cooling gases used in their refrigeration systems – and that's before you take account of energy for powering equipment.

The main cooling gases used by supermarkets – hydrofluorocarbons (HFC) are many thousands of times more powerful than carbon dioxide (CO<sub>2</sub>) in terms of their global warming impact.

In response to world concern about the destruction of the ozone layer, legislation was introduced to phase out the use of chlorofluorocarbons (CFCs) and other ozone destroying gases that were then widely used in refrigeration and air conditioning. HFCs were accepted as replacements because they do not destroy the ozone layer. However, their impact on global warming was not taken into account.

Our research has revealed that supermarkets are the biggest source of HFC emissions in the UK. In 2005 their refrigeration and air conditioning equipment containing HFCs emitted the equivalent of 2 million tonnes of CO<sub>2</sub> every year<sup>1</sup>. This is equal to flying in a plane from London to New York over 2.5 million times<sup>2</sup>.

Whilst progress has been made in domestic refrigeration, with many domestic fridges and freezers now using climate friendly hydrocarbons, progress in the commercial sector has not been so promising.

#### Alternative vision

It is technically feasible for supermarkets and other commercial refrigeration users to switch away from using highly destructive HFCs. And surprisingly, these climate-friendly gases, such as CO<sub>2</sub> (ironically), ammonia and hydrocarbons are not expensive – they're actually cheaper. Clearly, there would be costs in replacing equipment. Another barrier has been technical know-how – and training of refrigeration engineers.

Through projects such as 'Refrigerants, Naturally!', an initiative set up by the United Nations (UN) and Greenpeace, some big companies such as McDonalds, Unilever and The Coca-Cola Company are deploying greener refrigeration.

In 2007 M&S, Asda, Tesco, Somerfield, Waitrose and Sainsbury's jointly announced their intention to move away from HFCs. This collaborative effort sent a clear message to the industry that it's time to change. But the Environmental Investigation Agency (EIA) wanted to find out how far they had moved from words to actions.

So in summer 2008, EIA, sent out a detailed questionnaire to 11 UK supermarkets, asking them about their use of HFCs and what they are doing to reduce the climate change impacts of their refrigeration.

The results of the survey have now been pulled together, along with a ranking of the supermarkets and an analysis of where they are doing well and what more they should be doing in this area. We plan to do the same survey next year to see if improvements have been made.

## METHODOLOGY

EIA's supermarket survey league table has been compiled on the basis of data gathered from three sources

- Supermarket responses to a refrigeration survey issued by EIA in August 2008
- Correspondence with retailers and brand suppliers arising from the survey
- Material that is publicly available on retailer websites

Questions were asked about which cooling gases were used in stores, distribution centres, and transport. The survey also covered training, energy efficiency, leakages and future plans.

### The Campaign Steering Group

Once the results were in they were analysed by the campaign steering group – Fionnuala Walravens (EIA), Nick Cox (Earthcare Products) and Julia Hailes (consultant and writer). They created a score card on a range of issues and ranked the supermarkets performance accordingly. A detailed breakdown of how each supermarket scored in each category is available in the results section.

It should be noted that although objectivity has been strived for EIA does not in any way claim this survey to be a scientific analysis – the results simply represent EIA's perspective on the issue. EIA is grateful for the assistance it has received from retailers.

### Fionnuala Walravens



Fionnuala is a campaigner for EIA's Global Environmental Campaign. She is a leading authority on the inter-linkages between ozone and climate policies. During her time at EIA Fionnuala has written several reports and press articles on the climate change impacts of HFCs and has campaigned at international ozone and climate talks. The UN endorsed Environmental Investigation Agency is well known for its pioneering work into the illegal trade in ozone depleting substances and recently received a US Environmental Protection Agency 'Best of the Best' award, which distinguishes the highest calibre recipients from over 500 individual organisations and teams who have earned annual Stratospheric Ozone Protection awards between 1990 and 2007.

### Julia Hailes MBE



Julia is a leading opinion former, freelance consultant and speaker on social, environmental and ethical issues. Current or recent clients include Procter & Gamble, Shell, McDonalds, Marks & Spencer and Morrisons. Julia writes regularly for *Telegraph Online* and other media. She is author or co-author of nine books, including *The Green Consumer Guide*, which sold over 1 million copies worldwide and more recently *The New Green Consumer Guide*, which was published in 2007. In 1987 she co-founded, SustainAbility Ltd, a leading edge consultancy and think tank, which now has offices in London, Washington and Zurich. In 1989 Julia Hailes was elected to the UN 'Global 500 Roll of Honour' for her 'outstanding environmental achievements' and in 1999 she was awarded an MBE in the New Years Honours List.

Nicholas Cox



Nicholas is Managing Director of Earthcare Products Ltd and is considered to be a leading authority on environmentally friendly refrigeration and air conditioning. He is passionate about the issue and is providing advice and information to support the *Chilling Facts* campaign. During his long career, he has presented many papers on refrigeration and coolants, commented on relevant policy documents and legislation, as well as advising both the UK government and the European Commission. A fellow of the Institute of Sales and Marketing Management, he was made a graduate of the City and Guilds of London Institute for his work on natural refrigerants and energy efficiency.

## THE EIA SUPERMARKET REFRIGERATION SURVEY RESULTS

The survey revealed that none of the supermarkets yet have more than four stores using HFC alternatives. Given the seriousness of this issue, our conclusion is that the supermarket's response is totally inadequate. But we think that with greater public attention focused on this issue there will be some more significant progress over the next year.

Supermarkets did highlight training of refrigeration engineers as a problem – to date there aren't many trained to service refrigeration using natural refrigerants. This is something that needs support from both government and businesses, including the supermarkets, to change. It's of interest to note that climate-friendly refrigerants are commonly used in northern European countries such as Denmark and Germany so change really is possible.

### The Results at a Glance

#### **M&S IS TOP OF THE TABLE**

We felt that they were the most proactive in meeting the challenge to phase-out HFCs by having a supplier training programme, which they were helping to fund. They were also the only store setting targets for wide-scale in-store use of climate-friendly refrigerants. However, the current target of only 10 stores is still very modest!

#### **TESCO WERE SECOND UP**

Its use of climate friendly refrigerants behind the scenes and the development of a supplier training programme put them in good stead. But as the biggest supermarket in the UK they are also the biggest contributor to HFC emissions therefore have a responsibility to take serious action.

#### **SAINSBURY'S DIDN'T DO AS WELL AS THEY SHOULD**

Its response to EIA's survey focused on energy efficiency measures, although their CSR report indicated that their overall emissions were rising rather than falling due to sales growth.

#### **WAITROSE CAME BOTTOM OF THE MAJOR PLAYERS**

It trailed far behind due to some very vague responses to the EIA questionnaire. It appears that this 'ethical' supermarket has forgotten about global warming when it comes to their refrigeration systems.

#### **LIDL, ALDI AND ICELAND CAME BOTTOM OF THE PILE**

These three not only failed to participate in our survey but they also did not share any information regarding their corporate social responsibly practices so they received zero. They may be good value but at what cost to the planet? Iceland actually managed to score minus one for their refusal to honour their 1999 promise to switch to climate friendly alternatives

# The Results in Detail<sup>3</sup>

Supermarket name	Number of stores converted to climate-friendly refrigerants	Use of climate-friendly refrigerants in behind the scenes equipment	Use of climate-friendly alternatives in transport refrigeration	Training and technical	Energy efficiency
<b>M&amp;S</b>	3 out of 620  <i>4 points</i>	HFCs behind scenes  <i>0 points</i>	None  <i>0 points</i>	Have a supplier training programme which they are helping to fund  <i>9 points</i>	Vague initiatives. Did not quantify. But CSR says they have reduced overall emissions by 9% despite 5% growth  <i>5 points</i>
<b>Tesco</b>	4 out of 1710  <i>3 points</i>	100% ammonia in distribution centres  <i>5 points</i>	None  <i>0 points</i>	Working with a consultant to combine e-learning and practical training  <i>6 points</i>	Good measures. They are aiming for 12% reduction in power consumption. However CSR shows overall emissions are increasing  <i>4 points</i>
<b>Asda</b>	3 out of 364  <i>5 points</i>	All HFCs and HCFCs  <i>0 points</i>	HFCs for trailers but trialling Eco-Fridge with liquid nitrogen  <i>2 points</i>	Parent company Wal-Mart uses 100% integrated, water-source format heating, cooling and refrigeration systems  <i>1 point</i>	Setting targets. They have one green flagship store  <i>3 points</i>
<b>Co-operative</b>	1 out of 2250  <i>1 point</i>	Hydrocarbons used in integral back up systems  <i>4 points</i>	None  <i>0 points</i>	  <i>0 points</i>	Have set targets, specifying measures and numbers of stores  <i>4 points</i>
<b>Sainsbury's</b>	2 out of 765  <i>2 points</i>	Ammonia widely used in distribution centres  <i>4 points</i>	None  <i>0 points</i>	Investing in training of maintenance engineers to reduce energy usage but not in climate friendly refrigerants  <i>0 points</i>	Good measures in all new equipment, CSR report sets clear targets. However CSR report shows overall emissions are increasing  <i>4 points</i>
<b>Morrisons</b>	1 out of 375  <i>2 points</i>	Did not respond  <i>0 points</i>	None  <i>0 points</i>	  <i>0 points</i>	They have one very energy efficient store and have set modest target.  <i>3 points</i>
<b>Waitrose</b>	0 out of 192  <i>0 points</i>	All regional distribution centres either currently or will climate-friendly refrigerants by 2010  <i>5 points</i>	None  <i>0 points</i>	  <i>0 points</i>	They have one very energy efficient store and have set modest target.  <i>3 points</i>

Leak reduction measures and direct emissions of refrigerant through leakage	Transparency / credibility	Raising awareness of climate-friendly refrigerants	Future policy & plans	Bonus score (in case they really impressed us!)	Grand total
Direct emissions 140,000 tonnes CO <sub>2</sub> equivalent, this includes store and office and warehouses  <i>3 points</i>	Quick response and high level of detail offered  <i>9 points</i>	Supporting training and mention alternatives to HFCs in CSR report and in Plan A.  <i>7 points</i>	Extending trial CO <sub>2</sub> systems to 10+ stores. Bonus point for 2007 statement to move away from HFCs  <i>5 points</i>	<i>0 points</i>	<b>42</b>
High direct emissions 488,000 tonnes of CO <sub>2</sub> equivalent  <i>1 point</i>	Reasonably open  <i>7 points</i>	Supporting training and mention alternatives to HFCs in CSR report  <i>5 points</i>	Commercially sensitive but some plans. Bonus point for 2007 statement to move away from HFCs  <i>1 point</i>	<i>0 points</i>	<b>32</b>
Direct emissions are 227,549 tonnes of CO <sub>2</sub> equivalent  <i>2 points</i>	Reasonably open  <i>7 points</i>	No CSR report available  <i>0 points</i>	No specific targets but considering a range of approaches. Bonus point for 2007 statement to move away from HFCs  <i>4 points</i>	<i>0 points</i>	<b>24</b>
Low direct emissions, 123,413 tonnes CO <sub>2</sub> equivalent. But recent CSR results show leakage in 2007 was higher than 2006.  <i>2 points</i>	Quick response  <i>7 points</i>	Mention HFCs in CSR report but other sides of cooperative group in the UK are doing more  <i>0 points</i>	Developing hydrocarbon refrigeration systems which, if successful will be deployed in 1000 stores, but don't say when.  <i>5 points</i>	<i>0 points</i>	<b>23</b>
Didn't answer on direct emissions but claim they are working to reduce leakage through usage reports  <i>2 points</i>	They wanted to meet which was good but took a long time offering information  <i>6 points</i>	Nothing, they should be doing more as they are big players  <i>0 points</i>	Vague, but they voice concerns regarding the efficiency of CO <sub>2</sub> . Bonus point for 2007 statement to move away from HFCs  <i>2 points</i>	<i>0 points</i>	<b>20</b>
CSR claims direct emissions of 29,056 tonnes CO <sub>2</sub> equivalent.  <i>5 points</i>	Refused to participate – but information available on the internet  <i>2 points</i>	Mention climate friendly alternatives to HFCs in CSR report  <i>2 points</i>	5 stores to run on CO <sub>2</sub> by 2008  <i>3 points</i>	<i>0 points</i>	<b>17</b>
Didn't answer question  <i>0 points</i>	Poor – they initially refused to participate  <i>2 points</i>	No mention of HFCs in CSR report  <i>0 points</i>	Claim to be working wider use of climate-friendly alternatives but do not give any details. Bonus point for 2007 statement to move away from HFCs  <i>2 points</i>	<i>0 points</i>	<b>12</b>

## CONCLUSION

It's time for the supermarkets to take action.

Our research found that supermarkets were hampered by a shortage of engineers trained to work with climate-friendly refrigeration gases. But we think that the main reason why the supermarkets have been slow to move on this issue is because it's not yet in the public eye. We hope to change that and to encourage the public to show that they care.

**So we're asking the public to urge supermarkets to make a commitment to combating climate change by:**

- 1. Publically committing to not install new HFC equipment by the end of 2009 and to provide a date by which they will phase out HFCs throughout the supply chain.**
- 2. Join the 'Refrigerants, Naturally!' initiative, which encourages big companies to switch from climate damaging gases.**
- 3. Set up training courses teaching engineers how to handle natural refrigerants and ensure that contractors attend them.**

Our survey also revealed that the government is not doing enough to support supermarkets in switching away from HFC gases. Supermarkets suggested that the government should offer incentives to companies using natural refrigerants as well as be legislating for maintenance companies to train engineers to work with climate-friendly refrigeration gases.

EIA supports these suggestions and is calling on the government to take this matter seriously through the creation on policies which promote the use of climate-friendly refrigeration

**Find out more about the Chilling Facts campaign and what action you can take by looking at our website**



**[www.chillingfacts.org.uk](http://www.chillingfacts.org.uk)**

### References and notes

1. LACORS and EVIROS (2007) "UK Implementation of Fluorinated Greenhouse Gases and Ozone-Depleting Substances Regulations"
2. Flying emissions were based on a London-New York flight emitting 0.77 tonnes CO<sub>2</sub>- figure obtained at [www.climatecare.org](http://www.climatecare.org)
3. Aldi, Lidl and Iceland are not included in the results table because they failed to complete our survey and do not offer any public information on their refrigeration practices, we were therefore unable to award them any points. Somerfield has been excluded from this survey because they are being bought by the Co-operative and therefore Co-operative policies will apply to all Somerfield stores in the future.

## GLOSSARY

Term	Description	Global warming potential
Ammonia	A climate-friendly refrigerant used in some commercial refrigeration systems.	0
CO <sub>2</sub> – carbon dioxide	A greenhouse gas used as the base measurement to compare the impact of other gases in terms of their global warming potential. It is also a climate-friendly alternative to HFCs.	1
CFCs - Chlorofluorocarbons	One of a family of synthetic chemicals that were widely used in refrigeration, air conditioning, as aerosol propellants and for foam packaging, but were found to destroy the ozone layer – and so targets have been set to eliminate their use.	Up to 10,890
Climate-friendly refrigerants	EIA has used this term to refer to a group naturally occurring substances, such as ammonia, CO <sub>2</sub> and hydrocarbons, which are also known as natural refrigerants. They are used as alternatives to synthetic refrigerants such as HFCs, and CFCs.	Up to 5
CSR report	Corporate Social Responsibility report.	n/a
Global Warming Potential	How much effect a gas has compared to CO <sub>2</sub> in terms of its impact on global warming.	n/a
Hydrocarbon	A climate-friendly refrigerant which has been used to replace CFCs in domestic refrigeration.	Up to 5
HFCs Hydrofluorocarbons	A global warming gas commonly used as a replacement to ozone depleting substances in supermarket refrigeration. It is emitted into the atmosphere via leakage from equipment.	53-14,760
Ozone Depleting Substances (ODS)	These are any gases that play a part in depleting the ozone layer. The main culprits are CFCs but also HCFCs and some brominated substances, which are used as a fumigant, for example in strawberry growing.	Up to 10,890



[www.ChillingFacts.org.uk](http://www.ChillingFacts.org.uk)

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