

Update on Climate Change

For the past decade HARC has been closely following the development of national and international climate change regulations with an eye on their potential to impact some of the agents we use for special hazard fire protection, such as hydrofluorocarbons (HFCs). Although progress has been slow and difficult, in the last two years there have been significant developments on both the broader climate change issue and specific to HFCs.

Montreal Protocol – Kigali Amendment on HFCs

Although the Montreal Protocol was developed to control the production of ozone-depleting substances such as CFCs and halons, over the last few years there has been growing support for the idea that it could also be used to control the production of global warming gases such as HFCs, which are used as replacements in the same applications. In October 2016 at the 28th Meeting of Parties in Kigali, Rwanda, an amendment was approved to add HFCs to the Montreal Protocol and slowly phase down their production. Unlike the controls on ozone-depleting substances that require a complete phase out of production, the controls on HFCs are intended to significantly reduce overall production (on a CO₂ equivalent basis), but not completely eliminate it. Under the Kigali Amendment, the production phase down would begin in most developed countries (A2) with a 10% reduction in 2019 and end with an 85%

reduction in 2036. For most developing countries (A5), the phase down would begin with a production freeze in 2024 and end with an 80% reduction in 2045. The amendment provides for a slight delay in the phase down schedules for a group of developed countries in Eastern Europe and a group of developing countries in the Middle East with high ambient temperatures. The details of the HFC phase down schedules are presented in the table below.

The Montreal Protocol incorporates a technology review process that regularly assesses the progress of the phase out of ozone-depleting substances and the development of acceptable alternatives. Under the Kigali Amendment this technology review process has been extended to the phase down of HFCs. The initial technology review for HFCs would take place in 2022 and then every five years thereafter. Historically, technology reviews under the Montreal Protocol are performed by the Technology and Economic Assessment Panel (TEAP) and its sector-specific Technical Options Committees. In the fire protection sector these reviews are conducted by the Halon Technical Options Committee (HTOC). HARC members have been actively involved in the HTOC since the early 1990s and have served as co-chairs since 2004. HARC members have also provided limited funding for travel and specific tasks of the HTOC co-chairs since that time. Support for and participation in the HTOC by the fire protection industry will continue to be of great importance in properly managing the phase down of HFCs.

Phase Down Schedules for HFCs under the Kigali Amendment

	<i>A5 Group 1*</i>	<i>A5 Group 2**</i>	A2
Baseline	2020-2022	2024-2026	2011-2013
Formula	Average HFC consumption	Average HFC consumption	Average HFC consumption
HCFC	65% baseline	65% baseline	15% baseline***
Freeze	2024	2028	-
1st step	2029 – 10%	2032 – 10%	2019 – 10%
2nd step	2035 – 30%	2037 – 20%	2024 – 40%
3rd step	2040 – 50%	2042 – 30%	2029 – 70%
4th step			2034 – 80%
Plateau	2045 – 80%	2047 – 85%	2036 – 85%

*Group 1: Article 5 parties not part of Group 2

**Group 2: GCC, India, Iran, Iraq and Pakistan

***For Belarus, Russian Federation, Kazakhstan, Tajikistan, Uzbekistan 25% HCFC component of baseline and different initial two steps (1) 5% reduction in 2020 and (2) 35% reduction in 2025

United States

Federal Acquisition Regulation on HFCs

In May 2016 the DoD, GSA, and NASA published a final rule that amends the Federal Acquisition Regulation (FAR) to procure, when feasible, alternatives to high-GWP HFCs. There are four clauses to be included in government contracts that cover ozone-depleting substances (ODS) and high-GWP HFCs, refrigeration and air conditioning equipment, aerosols, and foam. Although there is no specific fire protection clause, the clause on ODS and high-GWP HFCs does apply to fire protection systems/equipment and bulk fire suppressants. This includes reporting requirements for equipment containing more than 50 pounds of HFCs and a general procedures clause which provides that, when feasible and unless a particular contract requires otherwise, contractors must use acceptable alternatives that have lower GWP in lieu of high-GWP products in end uses where such alternatives have been identified under SNAP. The use of reclaimed/recycled HFCs are included as products that minimize or eliminate the use of HFCs and are provided as an example of sustainable acquisition under the FAR.

DoD does not anticipate any significant impacts to mission critical applications of high-GWP HFCs in weapon systems in the near term, as many of these applications do not yet have feasible lower-GWP alternatives. However, mission critical weapon systems would be expected to transition over time should lower GWP alternatives be made available by industry and then tested and qualified to military standards by DoD activities. For non-weapon systems, the new rule would be expected to move people to lower GWP alternatives where they can meet requirements.

Environmental Protection Agency (EPA)

President Obama's Climate Action Plan directed EPA to use its authority under the Significant New Alternatives Policy (SNAP) program "to encourage private-sector investment in low-emissions technology by identifying and approving climate-friendly chemicals while prohibiting certain uses of the most harmful chemical alternatives." In response EPA accelerated the approval of low-GWP alternatives and began a process of changing the SNAP status of some high-GWP HFCs.

In July 2015 and December 2016 EPA published final rules that de-list from SNAP certain high-GWP HFCs in specific end uses: consumer aerosols, foam, commercial refrigeration, and auto air conditioning. EPA did not change the SNAP status of any fire protection agents in either rule. It should be noted that two of the agents that are being delisted for consumer aerosols are HFC-227ea and HFC-125, which are also used in fire protection, so there is some potential for confusion.

With the approval of an international HFC phase down under the Montreal Protocol and the recent change in US administrations, it is not clear if EPA will continue to develop additional SNAP status change rules in the future.

California

Senate Bill 605 requires the Air Resources Board (ARB) to develop a strategy to achieve reductions in short-lived climate pollutants (SLCPs). In November 2016 the ARB released a revised draft strategy that proposes a series of reduction measures for SLCPs, which include methane, black carbon, and HFCs. The proposed reduction measures for HFCs are outlined below. There are no actions specific to fire protection proposed in the draft strategy, which should be finalized in early 2017.

- Financial incentive for low-GWP refrigeration early adoption
- HFC supply phasedown
- Sales ban of very-high GWP refrigerants
- Prohibition on new equipment high-GWP refrigerants

European Union

A revised European Union F-gas regulation was approved in 2014 and entered into force in 2015. It includes a gradual phase down in the amount of bulk HFCs (in tons of CO₂ equivalent) that can be produced or imported in the EU beginning with a freeze in 2015 and reaching a 79% reduction in 2030. It also includes a ban on the use of HFC-23 in new fire protection systems and extinguishers as of January 1, 2016. An allocation is not needed to import fire protection equipment pre-charged with HFCs, but companies are required to report any import of fire protection equipment containing more than 100 tons of CO₂ equivalent HFCs. The regulation also requires the labeling of fire protection systems with the name of the HFC (now) and quantity both in weight and CO₂ equivalent (2017). It is expected that the EU will adjust its phase down schedule in line with the Kigali HFC Amendment.

Japan

Japan's HFC regulations became effective in April 2015 and include measures regarding the promotion of low-GWP/non-HFC alternatives for designated products, the phase-down of HFCs, and the reduction of refrigerant leakage from equipment during use. Manufacturers and importers of HFCs are subject to a phase-down of 40% reduction of HFC use by 2020 and 52% reduction by 2025. Equipment manufacturers have target GWP values set based on the lowest GWP (weighted average by volume) among designated products in the market. There are currently no required GWP targets for fire protection agents. It is expected that Japan will adjust its phase down schedule in line with the Kigali HFC Amendment.

Canada

In November 2016 Environment and Climate Change Canada (ECCC) issued proposed regulations on HFCs that include a phase down adjusted to align with the Kigali Amendment and product-specific prohibitions with GWP limits and target dates in specific sectors: foams, aerosols, auto air conditioning, stationary air conditioning, and refrigeration. There are no product-specific prohibitions proposed for fire protection. In June 2016 ECCC issued a notice outlining reporting requirements for manufacturers, importers, and exporters of bulk HFCs.

Paris Climate Change Agreement

Since 2007 the international negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) have focused on developing a new treaty that could replace the Kyoto Protocol. In December 2015 the UNFCCC Parties approved a new international climate change treaty referred to as “the Paris Agreement.” The main components of the Paris Agreement are the Nationally Determined Contributions (NDCs) that define the goals of each Party’s climate change program and outline the mitigation measures they are planning to undertake to meet that goal. A key difference of the Paris Agreement is that all countries, both developed and developing, have commitments. Under the Kyoto Protocol only developed countries had commitments, and this led some countries such as the United States and Australia to reject it and seek a new treaty. A key issue for the future of the Paris Agreement will be monitoring and verifying that countries are undertaking activities necessary to meet the goals of their NDCs.

The Paris Agreement has been ratified by 126 countries and has entered into force. The first Meeting of Parties to the Paris Agreement was held in November 2016 and resulted in the Marrakech Action Proclamation, which was seen as a strong political statement on the determination of countries to move forward on the Paris Agreement with or without the United States. Newly elected President Trump promised during the election to withdraw the United States from the Paris Agreement.

Conclusions

For industries such as ours that have relied in part on HFCs to make the transition away from ozone depleting substances, the climate change issue will continue to be important. HFC production phase downs are now in place in Europe and Japan, and will be instituted in most other countries in the next few years now that a Montreal Protocol amendment on HFCs has been approved.

As of now, very few of the actions discussed above would specifically restrict the use of HFCs in fire protection. One of the main reason for this is the small amount of HFCs used in fire protection as compared to other industries such as refrigeration and air conditioning. In addition, because of its required standards and third-party approvals, fire protection is viewed as a somewhat self-regulating industry. This view has been enhanced by the industry’s product stewardship efforts such as the voluntary code of practice for the use of HFC fire protection agents (VCOP), recycling code of practice (RCOP), and HFC emissions estimating program (HEEP).

HARC will continue to follow these issues closely and provide analysis on their potential to impact the fire protection industry. No other organization is more keyed into all of the environmental issues that affect fire protection than HARC. If you are not already a member, you might want to consider joining this year.