

Crime and Crime Again

The long-standing illegal trade in substances controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer

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Background

The Environmental Investigation Agency (EIA) has been investigating and documenting the illegal trade in ozone-depleting substances (ODS) since the mid-1990s, providing unprecedented insights into the dynamics of this multi-million dollar environmental crime, including the shifting smuggling routes and methods used to evade detection.

This briefing describes the long history of illegal ODS trade and, more, recently hydrofluorocarbons (HFCs). It examines efforts by the Parties to the Montreal Protocol to combat such trade, with consideration of potential next steps to meet the continued and growing challenge of ODS and HFC climate crime.

The emergence of the illegal trade in ozone-depleting substances – a brief history from mid-1990s to mid-2000s

The signing in 1987 of the Montreal Protocol on Substances that Deplete the Ozone Layer marked, at the time, the most ambitious attempt by the global community to control and eventually phase out widely used but environmentally damaging chemicals.

The newly controlled chemicals initially included five chlorofluorocarbons (CFCs 11, 12, 113, 114 and 115), gases widely used in cooling systems, aerosols and foams, and three halons (halons 1211, 1301 and 2402) used as fire retardants.¹

The architects of this landmark agreement adopted a phased approach to reining in the use of ODS, giving developing countries (referred to as Article 5 countries under the Protocol) a grace period of 10 years to implement the controls.²

Although it was not foreseen in 1987, the basic tenets of the Montreal Protocol, which rightly put the onus on industrialised (non-Article 5) countries to control the production and use of ODS ahead of Article 5 countries, created fertile conditions for an illegal trade in ODS to emerge and flourish.

While consumption was being rapidly phased out in non-A5 countries, production in developing countries was growing, guaranteeing a cheap and plentiful supply of ODS. Loopholes, such as the unrestricted trade in recycled ODS, continued production of ODS in non-A5 countries for essential uses and Basic Domestic Needs,³ and the allowance of imports for repackaging under Inward Processing Relief schemes all contributed to creating the conditions for the growth of a significant illegal trade.⁴

The first major milestone in the Montreal Protocol coincided with the emergence of the first wave of ODS smuggling. In 1995, the European Union (EU) prohibited the production of CFCs, except for Basic Domestic Needs and essential uses, and the United States (US) followed suit in 1996. The first major case of illegal trade in CFCs emerged in the US during the mid-1990s. US authorities launched Operation Cool Breeze and detected a series of illegal shipments of CFCs, centred around the state of Florida and the port of Miami in particular. The scale of the illicit profits being made from this lucrative black market prompted one Florida State Attorney to describe CFCs as second only to cocaine in terms of the value of contraband being smuggled through the port of Miami.⁵

Investigations revealed that the bulk of the illegal material originated in Russia and passed through the hands of brokers in Europe en route to the lucrative black market in the US. In most cases, the CFCs were shipped to the US under transit regulations, with the final destination declared as legal markets in Article 5 countries in Latin America and the Caribbean. But, the CFCs were instead laundered onto the US market. One Florida-based shipping company imported more than 3,000 tonnes of CFCs into the US, filing false shipping manifests stating that the material had been re-exported. In one of the first major prosecutions against ODS smugglers, the manager of the shipping firm was sentenced to five years in prison.⁶

During this period, a coterie of Europe-based brokers played a key role in trafficking virgin CFCs falsely declared as “recycled” from Russia to the US; some even set up operations in the Estonian port of Tallinn to source CFCs from neighbouring Russia. One of these companies, based in the UK and a subsidiary of a US company, received a licence from the European Commission in 1995 to import 2,000 tonnes of recycled CFCs from Russia, an unfeasibly large amount given the fact that Russia was still producing virgin CFCs and had no incentives in place to recover used CFCs.

Once in Europe, the illegal CFCs went to the UK where, under “Inward Processing Relief”, they were given official final destinations of Latin America or the Caribbean; however, they were illegally diverted onto the US market.⁷

US authorities estimated that between 7,500-15,000 tonnes of illegal CFC-12 were imported into the US between 1994-95.⁸

In response to the burgeoning illegal ODS trade, US authorities set up a multi-agency taskforce in 1995, bringing together a range of enforcement agencies including the Federal Bureau of Investigation, customs, the Environmental Protection Agency and the Department of Justice.⁹ The taskforce proved to be highly effective. From 1998 to mid-2003, 119 defendants pleaded guilty or were convicted of ODS smuggling. A total of \$40 million in fines was levied and \$30 million in restitution paid. A total of 76 years imprisonment was imposed and 900 tonnes of CFCs seized.

Initially, authorities in the EU were slow to respond to the threat posed by ODS smuggling, although industry analysts at the time estimated the size of the black market for CFCs in Europe to be between 10-20,000 tonnes a year.¹⁰ It was not until 1997 that a major trafficking ring involving several EU countries was detected and dismantled.

At the heart of the smuggling syndicate was the German company Taifun. It arranged the import of 800 tonnes of CFC-12 and Halon-1301 from a trading company called TT International in China, with shipping documents falsely stating that the chemicals were R-227, a legal replacement for ODS which was not being manufactured in China at the time. Taifun sold the CFCs and halons to buyers by claiming they were recycled material from German military stockpiles.¹¹ The profit motive for Taifun was clear – at that time, CFC-12 could be bought in China for just \$2 per kg and sold in the EU for \$35 per kg as “recycled” material.¹²

The scam was revealed when a buyer in Belgium grew suspicious of a consignment bought from Taifun which arrived in cylinders with Chinese markings. The chemicals were tested and found to be free of impurities, so could not be recycled as claimed by the seller. The company reported its suspicions to the authorities, leading to the interception of a further 150 tonnes of illegal ODS from China at the port of Rotterdam, in the Netherlands. In total, the company imported 650 tonnes of CFCs and 365 tonnes of halons from China over a three-year period. In 2001, in the first case of ODS trafficking to be brought before an EU court, the director of Taifun received a two-year suspended sentence and a fine of €230,000 equivalent.

The Taifun case revealed the emergence of China as the main source for contraband ODS, supplanting Russia. Under the Montreal Protocol, Article 5 countries such as China were allowed to continue producing ODS until 2010, ostensibly for domestic needs. China had been ratcheting up its production of CFCs from 4,500 tonnes in 1986 to 44,000 tonnes in 1996. It appeared that significant amounts were being shipped to lucrative markets in the EU and US, using a range of smuggling techniques such as falsely declaring virgin CFCs as recycled material and mislabelling CFCs as legal replacement chemicals such as HCFC-22.

In 1997, EIA set out to investigate the role played by Chinese companies trafficking CFCs to non-Article 5 countries and the methods used. EIA compiled a list of suspicious Chinese companies based on knowledge of seizures, solicitations and trade research. A front company was established by EIA and a request sent to the target companies for the supply of CFCs to the EU market.¹³

The results revealed blatant misuse of the derogation under the Montreal Protocol allowing trade in recovered and recycled ODS. EIA investigators contacted the company TT Intertrade, the main supplier to Taifun. The company quickly responded with a quote of \$2 per kg for CFCs packaged in one-tonne tanks and offered fake recycling certificates. Joe Koman, the boss of Ningbo Sino-Resource Import-Export offered a containerload of CFC-12 for \$2.45 per kg. He helpfully explained how the consignment could evade detection, stating: “Frankly speaking, we are supplying R12 overseas. However, some clients ask us to reduce purity and make R12 like recycled for the sake of import licence. The above is our secret. Please do not leak it out”.¹⁴

In September 1997, EIA revealed its investigation findings at the ninth meeting of the Parties to the Montreal Protocol, at which the Parties adopted the Montreal Amendment to require the introduction of an import and export licensing system (Article 4B).¹⁵

By the late-1990s, the international response to ODS trafficking was having a discernible impact. Strong enforcement and successful prosecutions in the US had created an effective deterrent, while the formulation of new regulations in the EU to ban the sale and use of CFCs and halons, except for some essential uses, would substantially reduce the black market for ODS.

In 1998, an EIA investigation team travelled to China for a series of undercover meetings with ODS traders to gauge availability of CFCs for export and the smuggling methods used to evade detection in restricted markets such as the EU. During a meeting with the owner of the company Ningbo Material General Corporation, investigators were offered a container of CFC-12, falsely labelled as the legal chemical HCFC-22. The company claimed to have been shipping CFCs into the EU market since 1995, supplying an Italian buyer with an average of six containers a year.¹⁶

EIA investigators engaged again with the company Ningbo Sino-Resource, which claimed to be the biggest exporter of refrigerants in China. Its CEO told the investigators: “Many of our customers require us to print the name of R22 (HCFC-22) if the goods are CFC-12. So the government regulation will be avoided. Anyway, you are taking a small risk to earn big profits.”¹⁷

China was still the main source for illegal CFCs entering the EU, with mislabelling the CFCs as legal HCFCs becoming the main smuggling tactic rather than claiming the materials as recycled. Customs data showed rising imports of HCFCs from China to the UK, France, Italy and the Netherlands, despite HCFC production still being allowed in the EU.

In the early 2000s, after the production and consumption freeze on CFCs for Article 5 countries came into effect, EIA began receiving intelligence of CFC smuggling into developing countries for the first time, a major shift in the dynamics of the illegal ODS trade. One of the biggest cases to emerge involved large-scale smuggling of CFCs into India via the neighbouring country of Nepal. At that time, India was still a major producer of CFCs, mostly for its domestic market. To protect its domestic producers India had introduced an import tax of 54 per cent on imports of CFCs. Nepal's import tax on CFCs was just five per cent, a tenth of that in India, giving rise to a widespread smuggling of CFCs from Nepal across the border into India.¹⁸

Indian brokers used the Customs Transit Declaration procedure to import CFCs through Indian ports to Nepal, with seals added and no inspection. The containers would be trucked into Nepal via authorised border crossings, where the customs seals would be broken and contents inspected. Then the CFCs would be unloaded from the container and smuggled back to India across the border in small consignments, often using handcarts. In 2001, EIA investigators visited the town of Birganj on the India-Nepal border and witnessed the smuggling activities first hand. Disposable 13.6kg cylinders of CFCs were stored at various warehouses around the town and then concealed in sacks and taken across the border into India. The growing availability of CFCs contained in disposable 13.6kg cylinders on the Indian market, where such cylinders were banned, was one of the first indications of illegal CFCs entering the Indian market. While in Birganj, EIA investigators witnessed CFCs transported in disposable 13.6kg cylinders being decanted into larger reusable 105kg cylinders widely used in India.¹⁹

Research by EIA revealed that the bulk of CFCs smuggled into India via Nepal originated from producers in Europe, which were still allowed to produce CFCs for Basic Domestic Needs.²⁰ Between early 1999 and mid-2000, it was estimated that 880 tonnes of CFCs were smuggled into India, equivalent to 12 per cent of the country's annual consumption. Customs data revealed that during the same period Nepal declared imports of 420 tonnes, yet the country's consumption was only 50 tonnes a year.²¹

Other Article 5 countries were also beginning to experience illegal trade in ODS. In February 2000, Malaysian customs seized four containers of CFCs with 4,600 cylinders inside. The CFCs proved to be counterfeit material using a brand name of a major US producer and made in China. In another case, imported cylinders labelled and packaged as the legal replacement HFC-134a were tested and found to contain CFC-12. The material was actually sold on the market as HFC-134a, which at that time cost \$90 per 13.6kg cylinder, compared with \$40 for CFC-12, ensuring a high profit margin for the smugglers.²²

In 2003, Filipino authorities made two major seizures. In the first, 15 tonnes of CFC-12 were intercepted, falsely labelled as HFC-134a. Two months later, a further 31 tonnes were seized, labelled as R22. The contraband was concealed in two shipping containers with a layer of legal R22 cylinders placed by the container doors in case customs officers opened it for inspection.²³

In many cases, the illegal ODS passed through transit countries, especially Singapore and Dubai, en route to the final destination. For example, the bulk of CFCs smuggled into India via Nepal had passed through the free trade zone in Dubai. Transit countries were being used to obfuscate the origin of the ODS and to provide a jumping off point into illegal markets.²⁴

In mid-2003, EIA investigators travelled to Singapore to probe the country's role as a transit point for ODS destined for the black market. Although Singapore had a domestic use ban, it served as a hub for ODS from producer countries and end markets in Asia, Africa, Europe and South America. EIA discovered minimal control of ODS shipments passing through the country in transit, with ODS stored in private warehouses rather than under customs control.²⁵

Undercover investigators contacted a range of ODS brokers based in Singapore, seeking to secure CFCs for export to South Africa, which at that time had banned import of CFCs. The owner of the company Leempeng Enterprises offered to supply the CFCs and arrange shipment to South Africa. He offered to supply a mixed container of CFC-12 and HCFC-22, using the trick of placing a layer of legal HCFCs by the container door, which would be shrink-wrapped to further deter inspection by customs officers. He also revealed that newly produced CFCs were being smuggled into South Africa via neighbouring countries, where they would be filled into industrial refrigeration equipment used in South Africa's mining sector and then quickly removed and sold on to the lucrative US market as recycled, for a huge mark-up compared with the sales price for the virgin CFCs. In response to the information, US authorities stopped issuing licences for the import of "recycled" CFCs from South Africa.²⁶

By 2005, China, still the main source of illegal ODS being increasingly seized in Article 5 countries, was in the process of closing down CFC production plants. This was the result of an agreement with the Multilateral Fund of the Montreal Protocol, which provided funding to close down CFC production facilities by 2007, rather than the originally planned 2010.²⁷

In mid-2005, EIA investigators returned to China to assess the impacts of the ongoing production plant closures on the global illegal trade in ODS. The investigators tracked down the Company Ningbo Sino-Resource, which had on two previous occasions offered to supply EIA's front company with illegal ODS. On this occasion, the company had changed its name to Ningbo Koman's Refrigeration Company. Despite the rebranding, and despite the Chinese Government having introduced a licencing regime, the firm was still involved in smuggling. The Sales Manager admitted that the company's export licence was exhausted, but offered to ship CFCs by changing the packaging and paperwork to R134a, a legal replacement. He said: "We have used this method many times, using R134a packaging, but actually it is R12 inside."²⁸

HCFC illegal trade

Following global concern about both the ozone and climate impacts of mounting HCFC use, in 2007 Parties to the Montreal Protocol agreed to accelerate the phase-out of HCFCs.²⁹

This required non-Article 5 countries to phase out production and consumption of HCFCs by 2020 and Article 5 countries by 2030.³⁰

Once again, more stringent non-Article 5 phase-out dates meant that illegal trade in HCFCs began in the US and Europe. In 2008, the United Nations Environment Programme (UNEP) estimated that up to 10 ships a day were ferrying small consignments of illegal HCFCs from non-EU countries into southern Europe.³¹

In 2010, US authorities acted against major HCFC smugglers. The Kroy Corporation was found guilty of importing 418 tonnes of HCFC-22, with a market value of almost \$4 million.³² Methods used by the Kroy Corporation to smuggle HCFCs into the US were similar to those seen with previous cases of CFC smuggling, including: mis-declaration, double layering and transshipment fraud. Another case brought to court by the US Government the same year found Mar-Cone Appliance Parts guilty of purchasing and selling 101 tonnes of black market HCFC-22 valued at approximately \$850,000. The company was ordered to pay more than \$1,000,000 in forfeits and fines.³³



Article 5 countries have also suffered from illegal trade in HCFCs. In 2003, Philippines customs seized 454 cylinders labelled as HFC-134a, but analysis revealed their contents to be a mix of CFC-12, HCFC-22, HFC-134a and a hydrocarbon.³⁴ A similar seizure by Thai customs of 200 cylinders labelled as HFC-134a in 2005 was revealed to be a mix of CFCs, HCFCs and HFCs.³⁵

As Article 5 countries approach the 67.5 per cent phase-out step in 2025, there are concerns that significant illegal trade in HCFCs will emerge. EIA is concerned that sustained growth in the production of HCFCs for feedstock use, in particular HCFC-22, could offer avenues for HCFCs intended as feedstock use to be diverted onto the black market. The 2022 Scientific Assessment of Ozone Depletion points out that in 2019 "a greater mass of HCFC-22 was produced in a single year than any other fluorocarbon in history", with global production close to one million tonnes. More than 70 per cent of this production is for use as feedstock for the production of fluoropolymers such as PTFE and other fluorochemicals such as HFOs.³⁶

HFC illegal trade – new and old challenges

Following in the footsteps of previous phase-outs, illegal trade in HFCs first surfaced in the EU, which had implemented an HFC phase-down under the EU F-Gas Regulation starting in 2015.

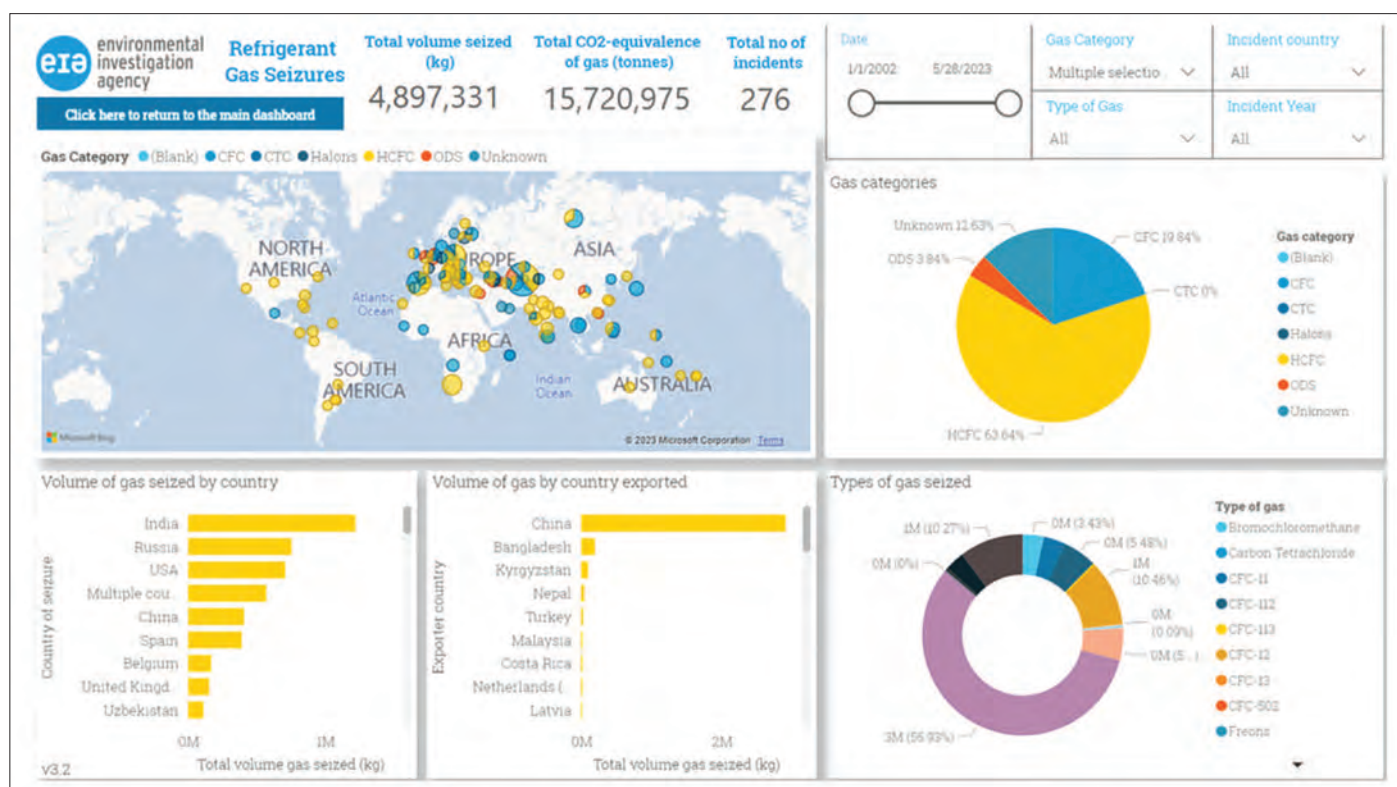
As early as 2016, and despite huge stockpiling of HFCs in 2014 before the F-Gas Regulation came into effect, reports of illegal (non-quota) HFCs in European markets began to emerge. As the phase-down approached a 37 per cent cut in HFC supply in 2018, prices of HFCs skyrocketed, reaching a peak of six to 13 times higher than the original price in 2015 and illegal trade began to surge.³⁷

In 2019, EIA published a first report on the illegal trade of HFCs, *Doors Wide Open*, highlighting concerns at the ease with which companies could openly bring HFCs through customs without quota and worrying trends of increased smuggling.³⁸ A survey of 18 industry stakeholders in 11 EU countries revealed more than 80 per cent were aware of or suspected illegal HFC trade and 72 per cent had seen or been offered refrigerants in illegal disposable cylinders. EIA's analysis of EU customs data demonstrated that many EU member states had significantly increased HFC imports, which overall in 2018 were too high for compliance with the quota.

Poland and Bulgaria were identified as the initial key points of entry for illegal HFCs into the EU, with the HFCs originating from China via Russia and Ukraine in the north-east and from Turkey and Albania in the south-east. After increased enforcement efforts by Polish and Bulgarian authorities, Romania emerged as an important entry point to the EU.³⁹

EIA investigations revealed a wide network of illegal traders. Some were established companies with F-gas quota, whereas others were opportunistic importers looking to make fast money. Meetings with individuals claiming to be experienced traders revealed routine bribery of border officials and the use of vans, refrigerated trucks and passenger coaches to transport consignments of HFCs.⁴⁰

As Europe's illegal trade in HFCs flourished, increased enforcement took place, facilitated by cross-border co-operation and coordination under the EU's Anti-Fraud Office (OLAF). Between 2018-20, more than 918 tonnes of HFCs with a climate impact equivalent to over 2.6 million tonnes CO₂-equivalent (MtCO₂e) were seized, with major seizures in Poland, Romania, Italy and Bulgaria.⁴¹



In 2022, a joint operation involving Spain's Guardia Civil and Tax authority, OLAF and Europol dismantled a major Spain-based criminal network involved in the illegal refrigerant trade. Operation Marum resulted in the arrest of 27 people and the seizure of 111 tonnes of HFCs and ODS valued at €11 million.⁴² The operation uncovered the workings of organised criminal networks involving narcotics, with profits laundered through a Madrid travel agency and the purchase of high-end cars.⁴³

Once again, the methods used were familiar. Transport documents revealed abuse of transit regulations and false documents. In one example, HFCs were reported to be passing through the port of Valencia with a final destination of Jordan, but they ultimately ended up on Spanish markets.⁴⁴

As the HFC phase-down gets underway in the US, authorities appear to have taken on board lessons from the EU experience and the history of illegal trade in ODS. The US established a new interagency task force on illegal trade in HFCs in 2021. In its first year of operation, the task force prevented illegal HFC imports of almost 900,000 tonnes CO₂e and Environmental Protection Agency (EPA) retired over five million tonnes CO₂e of import allowances for suspected violations of the HFC licensing and reporting requirements.⁴⁵ In March 2023, the EPA announced it had issued fines totalling more than \$900,000 to three companies for failing to report HFC imports and it was taking similar action against several others.⁴⁶ The US is also implementing an innovative new tracking database to provide real-time information and traceability on imports and sales of HFCs and usage of allowances.⁴⁷

New challenges

The new onus on the CO₂e of HFCs in relation to the EU quota regime has led to a surge in illegal trade in HFCs with very high GWPs, such as R-404A (GWP 3,922), as these chemicals require more quota.

According to EIA's climate crime tracker, global seizures of R-404A in 2020 accounted for 35 per cent of all refrigerant seizures, with more than 1,000,000 tonnes CO₂e seized.⁴⁸

The scale of organised criminal involvement in HFC climate crime appears to be growing, fuelled by increasing profits and low penalties associated with this crime. For example, in 2020 a representative from HFC producer Koura estimated potential profits from a single HFC shipment into the EU at €200,000 compared to the associated fines if caught, which could be as low as €5,000.⁴⁹

The rise of online trading sites and e-commerce also poses new enforcement challenges as it is hard to track down perpetrators. There is a growing need for downstream/supply chain tracking which enables HFCs to be traced all the way to the final customer. From skin care products to tuna, supply chain traceability systems are becoming the norm for various commodities around the globe.⁵⁰ Reflecting on the unprecedented scale of illegal HFC trade which arose in Europe, US HFC policy-makers are considering a digital HFC quota tracking system which will use a centralised database to ensure that all HFCs sold will be linked to quota all the way to the final customer.⁵¹



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Smuggling methods – past and present

Often combined, the common methodologies used for smuggling ODS and HFCs include:

Front door smuggling

In situations where there is no effective licensing system in place or where checking of shipments at customs borders is not carried out in a vigilant manner, smugglers openly import chemicals for which they do not have the necessary quota.

False labelling

False labelling is a common technique to disguise controlled substances as legal replacements. The contraband chemicals are shipped in cylinders and packaging of legal alternatives. Past seizures have detected CFC-12 falsely labelled as HCFC-22 (at a time when HCFCs were not subject to controls) and HFC-134a, HCFCs falsely labelled as HFCs and, more recently, HFCs falsely labelled as HFOs.

Mis-declaration

Mis-declaration is another commonly used fraud where ODS and HFCs are disguised by putting the names (and/or customs codes and other specific designations) of other similar, legal chemicals on shipping documents and invoices. In the past, CFCs were declared on shipping documents and invoices as other chemicals, such as HCFC-22. Mis-declaration is often used in conjunction with double-layering.

Fake recycled or reclaimed material

The definition of production and consumption under the Montreal Protocol does not include amounts recycled and reused,⁵² therefore trade in recycled or reclaimed refrigerants is less regulated than for virgin products. In one of the first smuggling methods uncovered which was widely used in the 1990s to traffic ODS to Europe and the US, virgin CFCs and halons were described as 'used', 'recovered', 'reclaimed' or 'recycled'. In some cases, this even involved virgin CFCs being deliberately contaminated to make the CFCs appear to be 'used' if tested.

Double layering

Smugglers can use tricks such as double layering by hiding the illegal material behind a layer of legal product. This is a frequently used scam and in past cases CFCs were hidden behind one or more layers of legal chemicals such as HCFCs. The smugglers can make physical customs checks even more difficult by tightly wrapping the cylinders or packing the container without using pallets.

Concealment

Controlled substances are hidden in ships, cars, passenger buses or trucks and moved across borders. For example, EIA investigations uncovered the use of passenger buses to smuggle controlled HFCs through Europe.⁵³ This method usually involves smaller quantities, but can be lucrative and the overall volume can be significant.

Transshipment fraud

Consignments of ODS and HFCs ostensibly destined for legitimate end markets are diverted onto black markets. This type of fraud often involves elaborate shipping routes, passing through various customs points and/or free-trade zones where customs procedures may be more relaxed. In the EU exploitation of the bloc's T1 transit regime is one of the main methods for smuggling consignments of non-quota HFCs onto the market.⁵⁴

Declared as equipment

Under the Montreal Protocol, "controlled substance" excludes any controlled substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance. In this method, ODS and/or HFCs are declared as 'equipment' such as refrigeration equipment, compressors or auto parts. In some cases, this can be simple mis-declaration; in other more elaborate cases, ODS or HFCs can be smuggled inside the equipment.⁵⁵

Efforts to tackle the illegal trade in ozone-depleting substances

Since the problem of ODS smuggling first appeared in the mid-1990s, a range of successful responses and interventions have contributed to curbing the problem.

Licensing systems

The first major response by the Parties to the Montreal Protocol to the threat of illegal trade was the introduction of licensing systems, agreed under the Montreal Amendment in 1997, covering both exports and imports. This brought much-needed transparency to the cross-border trade in ODS. Licensing systems were meant to:

- assist collection of sufficient information to facilitate Parties' compliance with relevant reporting requirements under Article 7 of the Protocol and decisions of the Parties
- assist Parties in the prevention of illegal traffic of controlled substances, including, as appropriate, through notification and/or regular reporting by exporting countries to importing countries and/or by allowing cross-checking of information between exporting and importing countries.⁵⁶

The initiative also provided the legal basis for unlicensed shipments to be seized at the point of export and import.

Multi-agency cooperation

Enforcement against the illegal trade in ODS and HFCs is the responsibility of a range of government agencies, including customs, environmental protection bodies and prosecutors.

The US, where the problem of trafficking of CFCs first emerged in the mid-1990s, responded by creating a task force bringing together relevant agencies, including the Federal Bureau of Investigation, US Customs, Environmental Protection Agency and the Department of Justice into a collaborative task force which conducted a number of successful operations, including Operation Cool Breeze targeting trafficking of CFCs and, later, Operation Catch-22 which focused on illegal imports of HCFCs.⁵⁷

Cross-border cooperation

By its nature, the trafficking of ODS is a cross-border crime, yet mechanisms for effective international cooperation between source, transit and destination agencies have often been lacking. To help fill the void, the World Customs Organisation's Regional Intelligence Liaison Office for Asia and the Pacific (RILO-AP) launched a cross-border enforcement initiative from 2006-09 called Operation Sky-Hole Patching, focused on intercepting illegal shipments of ODS and hazardous waste.⁵⁸

Partners included customs administrations and environment authorities, Regional Office for Asia and Pacific (UNEP ROAP), the Compliance Assistance Programme (CAP) of UNEP's Division of Technology, Industry and Economics (DTIE), Basel Convention Regional Centres and other key international organisations. In total, 21 countries participated in the operation, leading to seizures totalling 796 tonnes of ODS.⁵⁹

The operation was repeated in 2010, this time involving a wider geographical focus with more than 80 countries participating. Customs authorities around the world seized in excess of 7,500 cylinders of ODS.⁶⁰

Since 2009, eight DEMETER Operations have taken place, focusing on commodities that are regulated by the Basel Convention and the Montreal Protocol, i.e. ODS, HFCs and hazardous waste, including, recently, plastic waste.

Most recently, Operation DEMETER VIII in 2022 was led by the WCO Secretariat, RILO A/P and China Customs, with the participation of 90 Customs administrations. Polish Customs seized 1,239 non-refillable cylinders of ODS and HFCs (HCFC-22, HFC-134a, HFC-507 and HFC-23) containing 19,349kg of refrigerants.⁶¹

Capacity-building for enforcement agencies

Under the auspices of the UNEP's OzonAction, training in the detection of illegal ODS has been delivered to frontline customs officers around the world. A key aspect of the training has been the provision of handheld ODS identifiers, which can be used to test suspicious shipments on the spot, an important enforcement tool given the wide use of mislabelling and misdeclaration as a method of smuggling ODS.

Informal Prior Informed Consent

The informal Prior Informed Consent on Trade of Ozone Depleting Substances (iPIC) is a voluntary and informal mechanism of information exchange on intended trade between the authorities in importing and exporting countries which are responsible for issuing ODS trade licenses.

The system was launched in 2006 under UNEP's Compliance Assistance Programme (CAP). It is now global, with an online platform which allows customs officers and National Ozone Units to rapidly cross-check whether shipments of ODS or HFCs have been licensed by the exporting or importing country. The system has proven to be a successful tool for preventing illegal trade in ODS. For example, the iPIC consultations reported for the 2019 Global Montreal Protocol Award for Customs and Enforcement Officers prevented the illegal trade of more than 2,000 tonnes of ODS between 11 countries.⁶²

Montreal Protocol decisions relating to illegal trade

The need to effectively monitor the transboundary movement of controlled substances has long been recognised as a serious challenge for the Montreal Protocol. In the early years, several decisions were adopted, supporting the establishment of national licensing systems and systems for exchanging, reporting and validating information concerning permitted exports of ODS, including used, recycled or reclaimed ODS.⁶³

At the 7th Meeting of the Parties (MoP) in 1995, Decision VII/9 agreed that a licensing system should be incorporated into the Protocol by the 9th MoP, and requested exporting Parties to report on the types, quantities and destinations of their exports of ODS.⁶⁴ The first decision specifically referring to illegal trade was agreed at the same meeting, requesting information from the Parties on "dumping, illegal imports and exports, and uncontrolled production of Annex A and B substances and products containing them that could undermine the effectiveness of the Protocol".⁶⁵

Building on these developments, an Amendment to the Protocol addressing licensing was adopted by the 9th MoP in 1997. This Amendment introduced Article 4B, requiring all Parties to implement an import and export licensing system which would collect sufficient information to comply with their reporting requirements and assist in preventing illegal trade. To support A5 Parties, funding from the Multilateral Fund (MLF) was approved for this purpose. The 9th MoP also requested that the World Customs Organisation (WCO) recommend separate national codes for the most commonly used HCFCs.⁶⁶

With Article 4B in place, attention turned to enforcement. At the 12th MoP in 2000, the "present challenge" of effective control at national borders was acknowledged and several contributing factors were identified. These included problems in ODS identification, the complexity of relevant customs codes, the lack of a common labelling system and the lack of trained customs officers. The 12th MoP requested that the Secretariat begin scoping for a study, subsequently commissioned by the 13th MoP in 2001, to provide practical suggestions for addressing these issues.

Based on the recommendations of the study, the 14th MoP in 2002 encouraged Parties to introduce economic incentives promoting ODS substitutes and to consider demand control measures to curb ODS use. Parties were also urged to ensure their national customs classification systems distinctly identified the most commonly traded ODS and a requirement was introduced asking Parties to report all proven cases of illegal trade to the Secretariat.

In 2004, the 16th MoP began discussing the development of an international system for tracking trade in ODS and a feasibility study was commissioned the following year. Reporting to the 18th MoP in 2006, the study on developing a system for monitoring transboundary movement of ODS set out a number of options which could be adopted by the Parties to the Montreal Protocol. These were grouped into immediate, medium and long-term actions that could be taken.⁶⁷

Immediate actions included:

- full implementation of the requirement to report destinations for all exports
- development of systems to effectively cross-check all export and import data per country and per shipment
- greater use of regional ozone and customs networks to raise awareness and spread examples of best practice in licensing systems
- the adoption of clear definitions of the terms 're-export' and 'transhipment'
- clarification of the status of free trade zones.

Medium term options included:

- development of a centralised clearing house mechanism to cross-check all import and export data per shipment and country
- review of data collection and data reporting systems
- encouragement for customs investigations of illegal trade hotspots and supply chains
- national bans on disposable cylinders
- use of more detailed customs codes
- clarification on the essential minimum elements required for effective licensing systems alongside an evaluation of how licensing systems are working.

Long term options included:

- further efforts to improve data collection and reporting, including independent verification of data where discrepancies are significant
- implementation of a new centralised trade data collection and analysis system, drawing on multiple sources and allowing more targeted analysis of trade flows
- inclusion of transit movements in licensing systems, possibly through amending Article 4B
- adoption of a formal PIC system, with the Secretariat playing a central clearing-house role.

The 19th MoP in 2007 supported in principle the medium- and long-term actions, with all Parties asked to consider a number of tracking measures (including import and export quotas, shipment permit requirements, systems for monitoring ODS transit, bans or controls on the use of non-refillable containers and minimum labelling requirements). However, in subsequent years the focus of the Parties shifted away from illegal trade and most of the recommendations were not implemented.

Unexpected emissions of CFC-11

In May 2018, scientists revealed that atmospheric levels of CFC-11, a potent ODS banned globally since 2010, were significantly higher than expected, indicating new illegal production and use of CFC-11 occurring in East Asia.⁶⁸

EIA investigations traced the source of CFC-11 to illegal production and use in the polyurethane foam sector in China, which had continued for years undetected by the Montreal Protocol's existing monitoring and compliance mechanism.⁶⁹ Eighteen out of 21 companies interviewed by EIA investigators from 10 provinces confirmed using CFC-11 as the main blowing agent in the production of foam panels and spray foams.

Traders and buyers of CFC-11 in China repeatedly stated that it was used in the majority of China's rigid PU foam sector.⁷⁰ The core EIA findings were backed up by an independent investigation by the New York Times as well as official Chinese Government documents.⁷¹ A 2016 report from environmental officials in Shandong, a key area for foam production, had already warned that there was "still a large volume of illegally produced CFC-11 being used in the foam industry".⁷²

A nationwide enforcement effort by China resulted in a swift reduction in observed emissions. According to the latest Scientific Assessment of Ozone Depletion (2022), global CFC-11 emissions declined after 2019, dropping to 45 ± 10 Gg in 2019 and 2020, suggesting the elimination of most of the unexpected emissions that had occurred after 2012.⁷³

In response to the illegal production and use of CFC-11, Parties to the Montreal Protocol initiated a variety of studies from the Ozone and Multilateral Fund Secretariats as well as the Scientific and Technology/Economic Assessment Panels to examine the Protocol's institutions and mechanisms to better understand how to avoid similar situations in the future.

These have highlighted a broad set of shortcomings in the institutions and processes of the Montreal Protocol, as well new challenges that will arise as the Protocol takes on additional HFC controls.⁷⁴

Decisions related to illegal trade and strengthening the Montreal Protocol in response to CFC-11 unexpected emissions
XXX/3: Unexpected Emissions of CFC-11
XXXI/3: Unexpected emissions of CFC-11 and institutional processes to be enhanced to strengthen the effective implementation and enforcement of the Montreal Protocol
XXXIII/4: Enhancing the global and regional atmospheric monitoring of substances controlled by the Montreal Protocol.
XXXIV/5: Identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring.
XXXIV/8: Strengthening Montreal Protocol institutions, including for combating illegal trade.
XXXIV/7: Strengthening institutional processes with respect to information on HFC-23 by-product emissions.

Seizure data

In several Decisions, most recently Decision XXXIV/8, Parties to the Montreal Protocol have been invited to report to the Secretariat, on a voluntary basis, fully proved cases of illegal trade in controlled substances.

A comparison of the data received by the Secretariat to publicly available data compiled in EIA's Environmental Crime Tracker shows some disparity in the number and especially the weight of seizures that have taken place.

The Secretariat's "Summary of illegal trade practices" prepared for a July 2023 workshop on strengthening the effective implementation and enforcement of the Montreal Protocol states that "the extent and nature of illegal trade in controlled substances covering the period from 2002 to early 2023 is limited to the 559 cases reported by 46 parties to the Montreal Protocol." The weight of these seizures is estimated at approximately 1,781 tonnes.⁷⁵

EIA's Environmental Crime Tracker, which collates publicly reported seizures, holds records for the same period (2002-23) of 638 seizure incidents globally in 73 countries, with a total substance weight of 5,866 tonnes. This includes 276 ODS seizures of 4,897 tonnes / 15.7 MtCO₂e and 362 HFC incidents (in non-A5 Parties since 2019 only) of 980 tonnes / 2.7 MtCO₂e.⁷⁶

The significant disparity between data reported by the Parties and data gathered by EIA via publicly available sources is a cause for concern. While decision language has typically referred to 'fully proved cases', which might account for some of the discrepancy, it is clear that most Parties are not taking voluntary reporting seriously.



Next steps for the Montreal Protocol

As the Parties near the end of the HCFC phase-out and begin to phase down HFCs, the need for effective enforcement has never been greater. HCFC and HFC climate crime is occurring, costing states dearly through evaded taxes, placing burdens on already stretched enforcement agencies and undermining legitimate businesses.

ODS and HFCs are potent greenhouse gases and their smuggling is a serious climate crime that leads to increased emissions at a time when the world can least afford it.

In the past five years, the 2018 discovery of illegal CFC-11 production and use has reminded the Parties of the fragility of the Montreal Protocol's achievements and stimulated an examination of the institutions and processes of the Montreal Protocol with a view to strengthening implementation and ensuring the sustained phase-out of ODS and the phase-down of HFCs.

A time-bound comprehensive evaluation of the Montreal Protocol's monitoring, reporting, verification, compliance and enforcement mechanisms is required, with a view to adopting short, medium and long-term actions to strengthen institutional processes to ensure the sustainability of the ODS phase-out and to meet the new challenges under the HFC phase-down.

As part of this process, the Parties to the Montreal Protocol should revisit the recommendations from the 2006 monitoring transboundary trade study presented to MoP18, given that most of the recommendations are still highly relevant and have not been implemented.

The Parties should also consider ways to build enforcement capacity, ensuring high-level national and regional coordination between environmental agencies and other relevant counterparts, such as customs and border control, which is essential to detect and prevent illegal trade in ODS and HFCs.

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EIA UK

62-63 Upper Street,

London N1 0NY UK

T: +44 (0) 20 7354 7960

E: ukinfo@eia-international.org

eia-international.org

EIA US

PO Box 53343

Washington DC 20009 USA

T: +1 202 483 6621

E: info@eia-global.org

eia-global.org