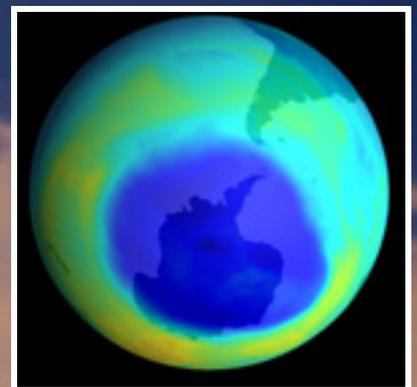


# LOST IN TRANSIT

Global CFC Smuggling Trends and the  
Need for a Faster Phase-out





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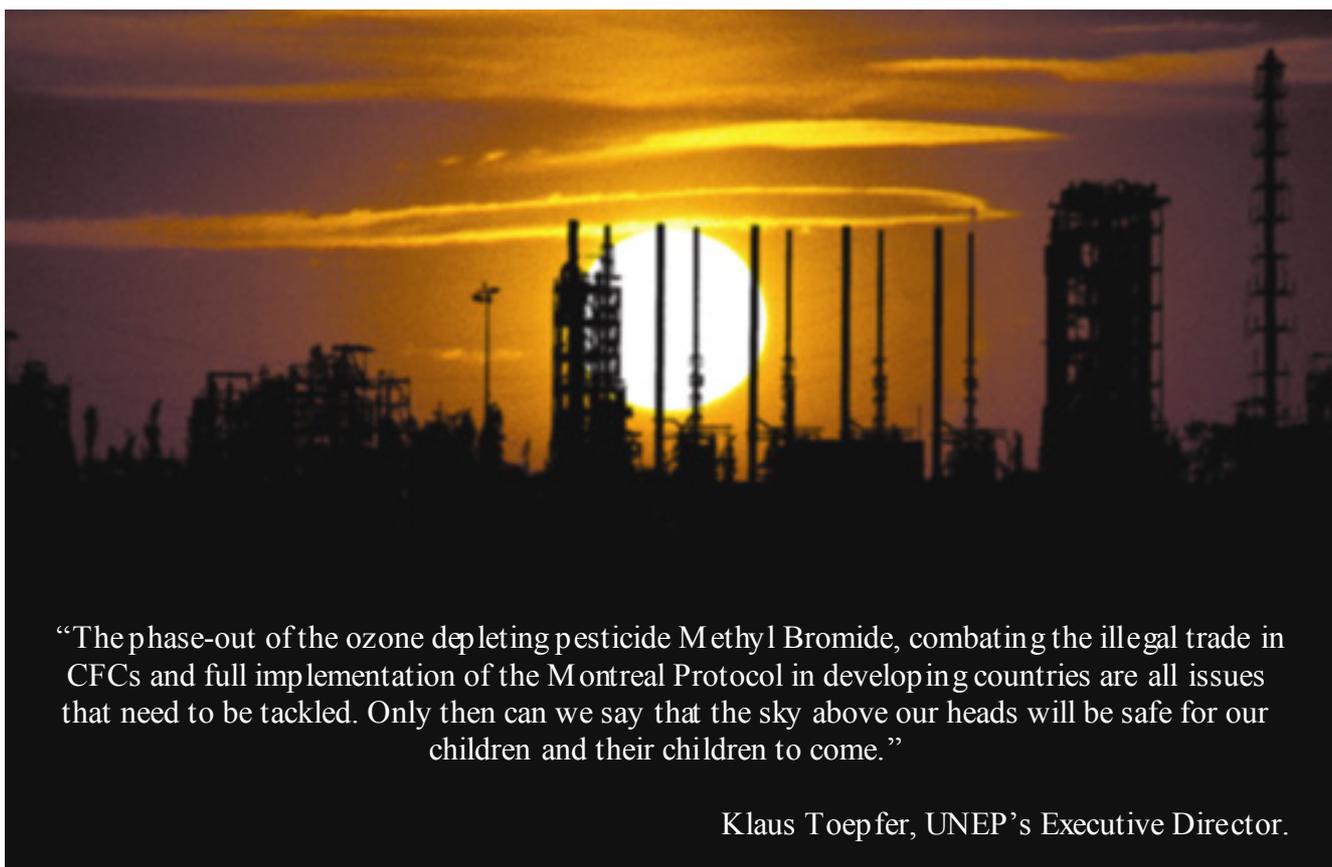
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**The Environmental Investigation Agency** is a non-profit NGO based in London and Washington DC committed to investigating and exposing environmental crime. EIA has been actively tracking the global illegal trade in ozone depleting substances (ODS) since the mid 1990s to provide information to the Montreal Protocol and other relevant bodies.



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“The phase-out of the ozone depleting pesticide Methyl Bromide, combating the illegal trade in CFCs and full implementation of the Montreal Protocol in developing countries are all issues that need to be tackled. Only then can we say that the sky above our heads will be safe for our children and their children to come.”

Klaus Toepfer, UNEP’s Executive Director.



## Introduction

The threat to the ozone layer from manufactured ozone depleting chemicals was discovered in 1974, but it was not until 1987 that governments began to take the first steps to address this. In the years that followed, good progress was made and the Montreal Protocol on Substances that Deplete the Ozone Layer is now widely recognised as an outstanding example of international cooperation and by far the most successful Multilateral Environmental Agreement. The fact that the Montreal Protocol has led to a reduction of global production and consumption of ozone depleting substances (ODS) by more than 80% compared with base year levels is testament to its success.

Whilst these achievements are recognised, the crisis of ozone depletion is still very much with us. A huge ozone hole continues to develop each year over Antarctica. The 2003 ozone hole equalled the all time record. Significant thinning of the ozone layer also occurs in the Northern Hemisphere, with considerable losses recorded recently over the Arctic, Europe and North America. This is of particular concern as it has serious implications for the more densely populated regions of the world. It is feared that interactions between ozone depletion and climate change could significantly delay, or even reverse, the recovery of the ozone layer.

Despite the achievements of the Montreal Protocol the problem of illegal trade persists. The illegal trade in ODS has not been addressed in any coherent manner by the Montreal Protocol and the slow reaction to the problem of enforcement persists today.

Investigations by the Environmental Investigation Agency have consistently shown that the integrity and success of the Montreal Protocol has been undermined, and continues to be at risk from a global illegal trade in ODS. Our most recent investigations have revealed that the illegal trade in these chemicals continues, and is particularly rampant in developing countries. Now that the phase-out schedules of developing countries are really beginning to have an effect, ODS smuggling could seriously threaten their compliance with the phase-out schedule.

The role of transit countries in the global illegal trade in ODS is of particular concern. Transit countries facilitate ODS smuggling by confusing the trail of the material and providing a jump-off point into illegal markets. Two transit points that continue to crop up in the illegal trade in ODS are Dubai and Singapore. Much of the information revealed in this report is focused on one of these: Singapore – which lies at the hub of a global network of illegal trade in ODS.

EIA conducted in-depth undercover investigations to identify how this trade operates in Singapore and how it links with illegal activities in other parts of the world. Our Singaporean investigations eventually led us to CFC smugglers in South Africa who use goldmines as a cover for a complex scam culminating in the sale of CFCs falsely claimed as ‘recovered’ on the lucrative US market.

This truly is a global illegal trade and the time has come for Parties to take bold and concerted actions to counter ODS smuggling. Given that a surplus of CFCs currently exists on the world market leading to cheap prices, a clear case can be made to speed up the phase-out of these chemicals and finally rid the world of CFCs. Such a move would choke off the illegal trade at its source and aid the recovery of the ozone layer, essential for the protection of the world’s ecosystems and for human health.

Dr. Ezra Clark  
Senior Campaigner, EIA  
November 2003

**Despite the achievements of the Montreal Protocol, the problem of illegal trade in ODS persists**





**The 2003 ozone hole reached a peak size of around 28 million km<sup>2</sup> in mid-September equalling the all time record**

## The Perilous State of the Ozone Layer

Severe depletion of the ozone layer has occurred due to human activities, which have introduced artificially high quantities of chlorine, bromine and other ozone depleting substances (ODS) into the stratosphere. Emissions of these chemicals cause higher quantities of harmful ultraviolet (UV) radiation to reach the earth's surface by destroying the protective ozone layer, which lies approximately 20 – 50 km above the Earth's surface<sup>1</sup> and removes some 99 % of ultraviolet solar radiation<sup>2</sup>. Of the ozone-depleting chemicals, chlorine is the most abundant, and results from chlorofluorocarbons (CFCs) and other ODS. Halons containing bromine are more effective at destroying ozone than CFCs and were widely used as fire suppressants. A variety of other ODS exist in addition to CFCs and halons, and their uses are wide-ranging and include pesticides and solvents.

Following the discovery of significant thinning of the stratospheric ozone layer over Antarctica in 1985, satellite measurements

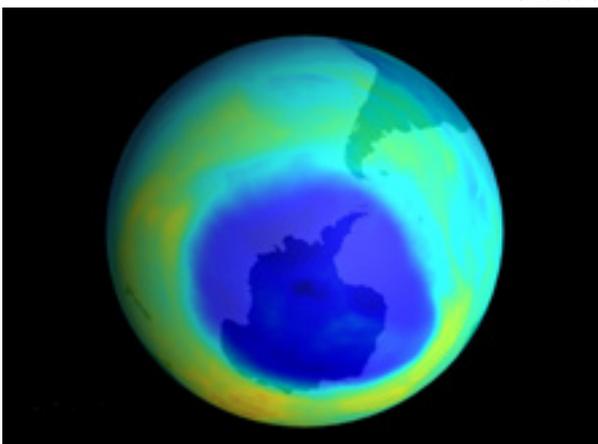
have confirmed that the ozone loss has reappeared in the austral spring for all successive years, and generally the Antarctic ozone hole has grown bigger and lasted longer each year. Contrary to claims at the time, the reduced size of the 2002 ozone hole was not an indication of recovery of the ozone layer, but was due to particular atmospheric weather conditions which are very closely related to how effectively ozone is destroyed. Reports at this time of ozone layer recovery are premature, as the 2003 ozone hole demonstrates. It was larger than had ever been measured in August and early September, with the hole reaching a peak size of around 28 million km<sup>2</sup> in mid-September, equalling the all time record in 2000. The edge of the 2003 ozone hole touched the tip of South America on September 6<sup>th</sup> and 7<sup>th</sup>, as it had done in 2000, when the ozone hole drifted over areas of Argentina, Chile and the Falkland Islands including the cities of Punta Arenas and Ushuaia<sup>3</sup> where ozone levels were reduced by up to 70%.

Ozone losses over the Arctic have been smaller than those recorded in the Antarctic in the 1980s and early 1990s. Yet in recent years, significant ozone depletion events have occurred over the Arctic region. Alarming reductions in ozone levels over Europe and North American mid-latitudes have been observed in the majority of years over the last decade. Ozone depletion in these regions has profound implications for the more-densely populated regions of the Northern Hemisphere. These reductions in ozone generally reached 20–30 % of pre-1976 averages and lasted continuously over the same region, usually for a few weeks<sup>4</sup>. It is predicted that Arctic ozone losses will persist into the 2050-2070 period, with recovery taking several more decades<sup>5</sup>.

**Right:** British Antarctic Survey scientists discovered spring-time depletion of the ozone layer above the Antarctic in 1985



**Right:** The 2003 ozone hole over Antarctica reached a maximum size of 28 million km<sup>2</sup>, equalling the record size of the 2000 hole



While the Montreal Protocol has successfully reduced the global use of ODS by more than 80%, the original projections for full recovery of the ozone layer by 2050 now appear to be increasingly optimistic. Such predictions are clouded by uncertainty, especially over the influence of global warming<sup>6</sup>, non compliance with the Protocol rules and the illegal production and trade in ODS, all of which could significantly delay recovery.



## The Human and Environmental Costs

Increased exposure to ultraviolet radiation (UV) directly impacts human health. These effects include suppression of the immune system, photo-aging of the skin, cataracts and skin cancer. Annually there are between two and three million new cases of non-melanoma skin cancers globally. In addition to this, more than 130 000 new melanoma skin cancer cases develop each year, which generally prove to be fatal. An estimated 66 000 deaths occur annually from melanoma and other skin cancers.

Recognising that the cause of many of these skin cancers is ultraviolet radiation, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) recently warned that as ozone depletion becomes more serious, and people increase their exposure to the sun, increased UV exposure is becoming a serious health concern. This is particularly worrying as people are often unaware of the health risks and the effects of exposure often do not appear until many years later.

The two UN agencies recognise that children are at particular risk, by being most vulnerable and most exposed and need to be protected to substantially reduce the risks of contracting UV exposure-related conditions, such as skin cancer and cataracts from appearing later in their lives<sup>7</sup>.

Recently it has become evident that the effects of UV radiation are much more serious to the eye<sup>8</sup> than previously thought. In 1998 it was estimated that 135 million people worldwide were visually impaired and 45 million blind, with cataracts as the major cause. Increased exposure to UV radiation due to depleted ozone is set to cause approximately 90 million additional cases of skin cancer by 2060<sup>9</sup> and 25 million additional cases of cataracts by 2050<sup>10</sup>.

The damaging impacts of UV radiation extend beyond just humans. The shorter wavelengths (UV-B and UV-C) are known to negatively affect biological and chemical processes of myriad living organisms<sup>11,12</sup>. Recent research has continued to confirm that elevated UV

radiation detrimentally affects aquatic and terrestrial organisms, as well as altering biogeochemical cycles.

Elevated UV radiation can increase damage to DNA, protein and pigment control and weaken immune systems<sup>13</sup>. Aquatic ecosystems are particularly at risk as more than 50% of the earth's primary productivity derives from aquatic ecosystems<sup>14</sup>. Increased exposure to UV can cause adverse effects on plants such as reductions in height, decreased shoot mass, and reductions in foliage area<sup>15</sup>. It is thought that even small effects of UV-B radiation might accumulate to produce more serious effects in subsequent years in perennial plants<sup>16</sup>. UV has also been demonstrated to degrade natural and synthetic materials, and elevated levels of UV accelerate the rate of this damage.

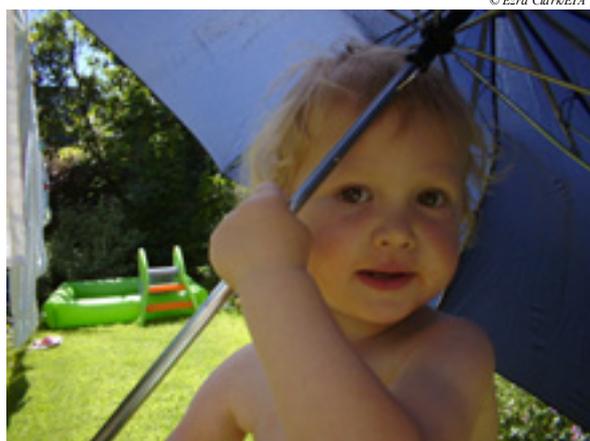
Environment Canada calculated that full implementation of the Montreal Protocol from 1987 – 2060 would provide a financial benefit of US \$224 billion, in terms of reduced damage to fisheries, agriculture and materials<sup>17</sup>. This calculation did not include the huge benefits to human health.

**People are often unaware of the health risks and the effects of exposure to UV radiation**



© Cancer Research UK

**Left: Malignant melanoma; this is the most serious type of skin cancer.**



© Ezra Clark/EIA

**Left: Children are at particularly high risk from the effects of depletion of the ozone layer**



**Right:** CFCs on the move near the Nepal/India border

## A Global Crime - the Illegal Trade in ODS

**Below right:** offer of CFC-12 from China, stating the documentation would declare these as R-22

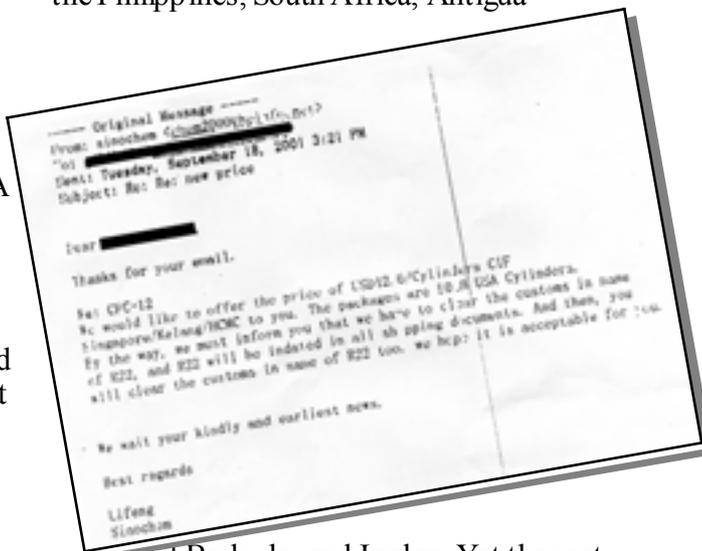
Efforts to rid the world of harmful ODS have been consistently hampered by illegal trade since the early 1990s, when the first meaningful phase-out activities occurred. As the US and European Union halted CFC production, dishonest brokers quickly sprang up, cultivating black market trading networks to exploit continuing demand. By the mid 1990s around 20000 tonnes of ODS were being traded illegally every year.



With the advent of stricter enforcement in the US, a total use ban in the EU and the adoption of a licensing system by Parties to the Montreal Protocol, the pattern of illegal trading has mutated to afflict developing (Article 5) countries.

the world. EIA has investigated, documented and compiled evidence of such instances of illegal trade in many Article 5 countries. Seizures of illegal ODS have taken place in a number of Article 5 countries, including India, the Philippines, South Africa, Antigua

The Montreal Protocol phase-out schedule required that from July 1999, Article 5 countries had to freeze their consumption at a base level set by average consumption between 1995 and 1997. In October 2001, EIA released a report which revealed the extent to which the illegal trade in CFCs was emerging in developing countries, only two years since this freeze<sup>18</sup>. This report focused on the smuggling of CFCs into India through the land borders of its neighbouring countries, which at the time did not control the import of CFCs. Some progress has been made in combating this trade and closing these illicit routes, but the smugglers, always one step ahead of the authorities, have begun to use new ways and methods to bring the material in.



It does not come as a surprise that similar scams, as well as new and deviously complex methods have been identified in many parts of

and Barbuda, and Jordan. Yet the vast majority of ODS being smuggled into Article 5 countries reaches the black market unhindered.

**Right:** Under the Montreal Protocol and its amendments, ozone depleting substances are to be reduced and eliminated

### Article 5 Phase-out Schedule

Date	Schedule
June 1999	Consumption Freeze
2005	-50 %
2007	-85%
2010	-100%

*Baseline consumption is average of 1995-1997*

Evidence indicates that there is currently a surplus of CFC production, and CFC prices have not risen in line with predictions<sup>19</sup>. This is despite the freeze and on-going production phase-out in China and India, and indicates that demand for CFCs is likely being satisfied. This is occurring at a time when developing countries should be phasing out the consumption and production of CFCs and it would be expected that shortages of material would arise, particularly as Article 5 countries should be consuming only 50% of their baseline consumption by 2005. It is of great concern that low prices for CFCs hamper the adoption of alternative chemicals and that the surplus production promotes illegal trade. It is also suspected that illicit production is



occurring, fuelled by the low cost and widespread availability of carbon tetrachloride (CTC), a precursor for CFC production.

ODS smuggling also persists in developed countries because of the huge profits to be made, with the US remaining a prime target. Figures recently produced by the US Department of Justice point to a substantial projected shortfall when stockpiles are compared with demand for CFC-12 automobile air-conditioning systems over the next few years creating an increased market for potential illegal trade. In the US the stockpile of CFC-12 is now all but depleted and although there are some pockets of legal product, supplies of CFC-12 are frequently illegal. The economics behind this trade are clear – to replace a CFC-reliant air-conditioning system costs considerably more than refilling or topping up the system with CFCs, promoting the continued use of these chemicals. EIA investigations have revealed the lengths to which middlemen will go to outwit the US import controls.

US authorities have been very successful in catching the smugglers. From 1998 to mid-2003, 119 defendants have pleaded guilty or have been convicted of CFC smuggling; 82 cases have been indicted. More than US \$40 million in fines, more than US \$30 million in restitution and more than 76 years of jail time have been imposed. Almost 900 tonnes of CFCs have been seized, but US authorities estimate that more than 7000 tonnes of CFCs



© Debbie Banks/EIA

have been smuggled into the US over this period<sup>20</sup>.

A similar situation is apparent in Japan where approximately 20 million of the 70 million cars in the country have CFC-12 based air-conditioning systems. The alternatives for CFCs are expensive, and they are not widely used. For this reason Japan has emerged in recent years as a focus for ODS smugglers. In three recent cases whilst 45 tonnes of CFCs were seized which were being illegally imported, authorities estimate for example, that 400 tonnes were illegally imported in 2001<sup>21</sup>.

**Above: Atofina produced CFCs (Forane-12) being moved between locations on the Nepal border by smugglers who illegally transport the material into India. Inset shows detail of packaging**

## Covering the Tracks - transit shipments and the illegal trade

EIA's investigations into the smuggling of ODS in developing countries reveal the central role played by transit trade in confusing the trail between the producer or broker and the black market destination.

For instance investigations carried out in India in 2001 documented how considerable quantities of CFCs being smuggled via neighbouring countries were produced in the EU, but were routed via transit hubs. EIA estimates that more than 75 tonnes of *Elf Atochem* (now called *Atofina*) material was imported into Nepal between March 1999 to October 2000 via the Indian port of Calcutta. The material from this company alone was greater than Nepal's annual baseline consumption of 27 tonnes as calculated by the Ozone Secretariat.

**Left: Ausimont chemical plant in Alessandria, northern Italy**



© Ezra Clark/EIA



**Right: Dubai in the United Arab Emirates, the free trade zone functions as a major centre for illegal trade in ODS**

While the production facilities in the EU are perfectly legal, and are producing CFCs for export to Article 5 countries in line with the production levels agreed at the 11<sup>th</sup> MOP in Beijing in 1999, unscrupulous brokers and traders still buy the material from the producers and attempt to divert it on to the more lucrative black market in developing countries. EU produced CFCs, as well as material from the other producing countries of the world, principally China and India, tend to pass through intermediate transit countries en route to the destination country.

The use of transit countries in the distribution of the material can confuse the trail between the producer and consumer, disguising the origin of the material and making the paper trail harder to follow. The common system of selling to brokers removes the responsibility of the manufacturer from any verification that the goods arrive at their intended destination or that material is not being supplied in excess of a country's annual consumption. EIA's investigations show that two transit points continually crop up in the illegal trade in ODS - Singapore and Dubai (in the United Arab Emirates). Both ports are major global trading centres and place the ethos of free trade and easy movement of goods above meaningful controls of transit cargo.

Sources reveal that the Dubai free trade zone functions as a major centre for illegal trade in ODS, especially as a conduit for illegal ODS passing into Pakistan and India. Pakistan dealers such as *Luck Trade, Air Master and Zaffar Brothers* are in league with Afghan smugglers and Pakistan-based businessmen in Dubai who are at the forefront of this illegal trade. In a recent case, where considerable amounts of material were being illegally shipped from Dubai to Pakistan, the Pakistan Federal Investigation Agency raided a number of shops and businesses in Lahore, Pakistan and seized illegally imported cylinders of CFC. The importer in Pakistan was *Zaffar Brothers* but although some arrests were

**Right: Singapore- one of the busiest ports in the world and central to the illegal global trade in ODS**



made, the main suspect, Babu Ebrahim fled to Dubai to avoid the authorities<sup>22</sup>.

Singapore is one of the busiest ports in the world and every day around 40 000 containers pass through the prosperous island-state. Its pre-eminent role in global trade was recently cemented by the signing of a Free Trade Agreement with the US, the world's largest economy. It also enjoys a reputation for business efficiency and reliability and is classified as the fifth least corrupt country in the world<sup>23</sup>. Yet Singapore has emerged as a major hub of the global illegal trade in ODS.

EIA's undercover investigations have revealed that while CFCs are strictly controlled within Singapore through a use ban, substantial quantities of CFCs flowing through Singapore en route to other countries are not adequately controlled. ODS are brought into Singapore from China, India, Mexico, Venezuela, Netherlands, Greece, Spain, UK, Malaysia, USA, Italy, Japan, South Korea, Taiwan and France<sup>24</sup>. The CFCs passing through Singapore are sometimes decanted or re-packed, and then shipped to destination countries around the world, including Indonesia, the US, Russia, Vietnam, Nepal, Cambodia and China.

Behind this transit trade lies a network of Singapore-based brokers, exploiting Singapore's lax controls to divert CFCs onto the black market. The controls of the goods which are 'in-transit' in Singapore are almost non-existent - they are not stored within a customs compound but in various yards, workshops and storage areas around the island. As long as the quantities claimed to be imported correspond with the quantities exported up to a year later, the Singaporean authorities are satisfied. Such loose controls plays into the hands of unscrupulous dealers, who are conversant with the regulations governing ODS trade but prefer to break them for a profit.

## The HGL Investigation

To probe the involvement of Singaporean businesses in the illegal trade in ODS, and the methods used to avoid detection, EIA established a front company – *Hall Global Logistics (HGL)* – to enter into trade negotiations with chemical dealers in Singapore. *HGL* was positioned as an international trade broker seeking CFCs for clients in South Africa. This country was chosen due to its classification as an Article 5 party, but one which has enacted an import ban on CFCs.

A list of companies in Singapore was compiled using information obtained during previous investigations, confidential sources and business directories. Initially a simple fax or email enquiry was sent to 26



target companies, outlining *HGL*'s requirements and requesting information on price and availability for both CFC-12 and HCFC-22. At this early stage several companies informed us that such shipments would not be possible due to the controls of CFCs and cited Montreal Protocol

rules. Yet many companies replied with prices and did not mention any restrictions on trade in CFCs. Based on these responses EIA investigators travelled to Singapore and met with six companies to further discuss the possibility of obtaining CFCs from Singapore for shipment to South Africa - a clear violation of the Montreal Protocol regulations.

During a series of face-to-face meetings at the offices of the target companies EIA investigators encountered a range of responses. One company immediately checked South Africa's status regarding CFCs imports and said such an export was not possible, helpfully suggesting alternative chemicals. At the other end of the spectrum were chemical dealers willing to employ devious and illegal practices to ensure they were able to do business with EIA's fake company. Several companies revealed the export of CFCs to



Left: CFC-12 in the warehouse of Sing Swee Bee Enterprise Pte Ltd

Below left: Singaporean chemical dealers were contacted by a front company - *HGL*

countries without the relevant licences, relying on contacts in customs to facilitate the illegal import. In one case *HGL* was offered supply using a complex system of altering the shipping documents to avoid possible controls and to ensure that the supplier's name disappeared from the documents. One trader advised *HGL* to import CFCs in small canisters to avoid suspicion, while another offered creative methods to mis-declare and mislabel the goods to avoid customs controls. The overall impression gained from these meetings was that trade was more important than obeying the rules which were seen as getting in the way of making a profit. Furthermore, several of the target companies claimed to be licensed by the Singaporean authorities, adding that such a process was a mere formality and did not involve any checks, apart from an annual tallying of amounts imported against amounts exported.

## The Leempeng Network

During the on-site investigation one company stood out as particularly devious and experienced in the intricacies of the illegal CFC trade - Leempeng Enterprise Pte Ltd. The Executive Chairman, Michael Ong, who met with EIA's investigators had a wealth of experience in avoiding the controls of the CFC trade and a truly global trading network to match.



Left: Cylinders of CFC-12 stored in the car park area outside the warehouse of Leempeng Enterprise Pte Ltd



**Mr Ong explained how the CFCs would be concealed behind a layer of HCFCs**

Ong was very well informed as to the regulations in place as a result of the Montreal Protocol and knew immediately that imports of CFCs into South Africa were banned without needing to check.

During an initial hour-long meeting at *Leempeng's* three-storey office building in the Kallang industrial area, Ong informed undercover EIA investigators that to get CFCs into South Africa the best option was to smuggle the chemicals in through neighbouring countries, an activity he claimed to have experience of. He was careful to state he achieved this by using people unconnected to his company. Ong repeatedly stressed the importance of having connections to enable such illegal shipments to proceed, adding that paperwork was of no consequence with the right connections.

In addition to using his extensive contacts, *Leempeng* also manages to avoid customs and Montreal Protocol controls by mis-labelling cylinders. It was recommended that if shipping to countries such as South Africa, where the import of CFCs is banned, creativity was required. Small aerosol sized cans (50 – 400ml) which are popular with DIY customers are filled at the *Leempeng* warehouse in



©EIA

Singapore with CFC-12 from China, they are then labelled as 'air-conditioner oil' to avoid customs controls. Ong boasted of using this method to ship CFCs to China.

During a second meeting Ong went into more detail as to how he could facilitate the illegal shipment of CFCs into South Africa. While again expounding the benefits of customs contacts and carefully covering ones tracks, he explained how CFCs could be concealed and the paperwork falsified to avoid suspicion. Ong felt that it was best to ship through a neighbouring country and then bring the goods into South Africa through a land border, a process made easier by the free movement of goods within the Southern African Development Community (SADC) region.

This meeting was followed up with an email containing an offer for a mixed container of CFC-12 and HCFC-22. In it Ong explained how the CFCs would be concealed behind a layer of HCFCs. The goods would also be shrink-wrapped to further impede customs inspections; an arrangement apparently favoured by all *Leempeng's* clients. It was suggested that the Bill of Lading would simply describe the contents of the container as 'refrigerants', and the customs declaration as 'R-22 refrigerants', successfully avoiding declaring the prohibited cargo of CFC-12. *Leempeng* has two huge warehouses in Singapore and keeps a large stock of CFCs on hand, so export could be arranged immediately. *HGL* was offered Genetron CFC-12, manufactured by the *Honeywell* plant in Mexico, as well as also being offered *Leempeng's* own brand called PORTA-12.

**Above right:** Mr Michael Ong of Leempeng Enterprise

**Right:** Can of R-12 in the office of Sing Swee Bee Enterprise. This company claims to large export quantities of these to the US



©EIA

**Right:** Various chemicals, including CFCs on display in Leempeng's office/warehouse premises



©EIA



11 September 2003

Dear **Michael**,

Many thanks for the kind comments in your email. Its a pleasure meeting **you** and yourself last week and I believe being creative from both ends, we should have great businesses together

We can immediately ship you 1 x 20ft container of the following:

R12 @ 900 disposable cylinders x 13.6 kgs  
R22 @ 200 disposable cylinders x 13.6 kgs

All the 900 R12 disposable cylinders will be stuffed inside the container while the 200 disposable cylinders of R22 will be placed at the end of the container up to the container's doorway. The 200 cylinders of R22 will be in 4 pallets x 50 pcs shrinkwrapped to make it difficult to access from the doorway to reach inside because it is so tightly packed. All our clients are happy with this arrangement.

The shipment will be declared as 1100 cylinders of Refrigerants on the B/L. You will open your Lic as 1100 cylinders Refrigerants. For Customs declaration at your destination port we can provide a separate invoice indicating R22 Refrigerants.

Our FOB Singapore prices as follows:

R12 @ USD36.70 per cylinder  
R22 @ USD22.80 per cylinder

Please advise if you need a proforma invoice for your Lic opening. Weekly departures available to Dar-es-Salaam. For Beira we are still enquiring.

Best regards  
Michael Ong  
LEEMPENG/Singapore

stated by Ong that this material was reclaimed from their unused stock, of which 40 tonnes still remains.

It was made clear that all the stocks of reclaimed CFCs already had customers in the US, as this chemical is very much in demand, particularly for the servicing of automobile air-conditioning systems. However the US authorities are now suspicious of the quantities of 'used' CFCs that are available for export from Singapore, and are now cautious when granting non-objection notices allowing for their import. *HGL* was offered a consignment of over 18 tonnes of used CFC-12, claimed to have been obtained from aerosol cans. Although this material had a non-objection notice from the EPA it was still in *Leempeng's* warehouse as the American buyer could not find the money to pay for it.

**Left:** Fax received from Michael Ong offering to mis-declare a shipment of CFC-12

**Below left:** Leempeng office in Kolam Ayer Industrial Park, Singapore

*Leempeng* also exports large quantities of CFCs to the US. Under US regulations exports are only permitted for used CFCs that have been recovered from existing equipment. The profits to be made in successfully exporting CFCs to the US are huge; reclaimed CFCs can be sold to US importers for more than US \$9/kg. *Leempeng* have successfully shipped CFCs, each shipment of around 25 tonnes, to the US with Environmental Protection Agency (EPA) approval. It was

Another Singaporean company which responded to *HGL* also admitted to having experience in sending virgin CFC-12 to the USA – *Sing Swee Bee Enterprise*. This is a large chemical dealer in northern Singapore which has a huge warehouse replete with of a huge variety of chemicals. During a tour of the warehouse EIA investigators were told that this company exports large quantities of CFC-12 in small disposable cans. We were shown one such consignment, which was ready to be shipped; the label revealed it was destined for Alabama in the USA.

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## Easy Come, Easy Go – Singapore’s Chemical Dealers



©Johan Newman/ELI

***Forance Air-Con and Refrigeration Parts Supplies Pte Ltd (left)***, buy chemicals from Australia, India and Greece and export CFCs to many countries including Vietnam and Indonesia. *Forance* offered our front company CFC-12 at US \$34.806 per 13.6 kg cylinder.



©ELI

“Indonesia, we cannot go in [with CFCs] but when we ship to them its up to them what they do with it. We will send it to the forwarder ... and the forwarder will have the contact with their own customs, and they can do what they want”

“since this is the case also I cannot help them, they have to help themselves you see, if they know what to do, if they have a good connection with the customs we don’t care, we just move in our product, you see”.

**Judy Leow, *Forance* (left), discussing imports to Indonesia, and her response after being informed South Africa has a licensing system preventing the import of CFCs**



©Ezra Clark/ELI

***Mega-Tech Air-conditioning & Engineering Pte Ltd (left)*** has two large factories in China and in Thailand, the company makes air-conditioners and chillers, as well as a range of other products and services. They import CFCs from China and India, exporting to many countries including Russia and the Middle-East. For our front company *Mega-Tech* offered to export a container of 1150 cylinders of CFC-12 (13.6 kg) to Durban, South Africa. The price quoted, including shipping, was US \$43.50 per cylinder.



©ELI

“So my factory people will issue me a set of bill of lading [documents] to the destination port, say in South Africa, ... So that your buyers side receives the documents, all as if that you are the one who shipped everything for them, our name will never come in anywhere.”

**Richard Goh, *Mega-Tech* (left), claiming to be following the advice of the Singaporean import-export authorities to avoid the licensing requirements of transshipment through Singapore.**



**Leempeng Enterprise Pte Ltd, (right)** import CFCs from India, Mexico and Brazil, exporting to countries such as Indonesia, Thailand, Malaysia and Japan. *Leempeng* offered HGL CFC-12 at US \$36.70 per cylinder concealed in a container behind a layer of R-22 costing US \$22.60 per cylinder.



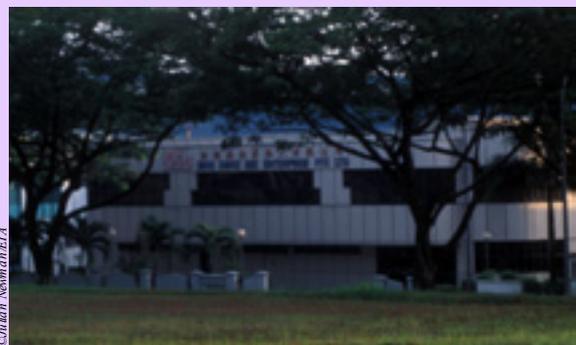
“we always need connections...you see whenever we do business we must have connections...paperwork not important once you have connections, paperwork not important, they are only on paper...they can always be manipulated...you can always print them out anytime, but most important when you ship; the connections”

“if you are selling to places like South Africa or countries that cannot import [CFCs],... [we need to be] creative... we send in small cans... you will not detect”

**Michael Ong, *Leempeng* (right)** reveals how he can avoid customs and other regulations intended to control Singapore’s CFC trade.



**Sing Swee Bee Enterprise Pte Ltd (right)** source their CFCs from India and China. They export to many countries including Malaysia, Bangladesh, Aruba, Vietnam and Myanmar and surprisingly to the US. HGL was offered CFC-12 by Sing Swee Bee at US \$32 per 13.6 kg cylinder.



EIA: maybe I am misunderstanding, in the aerosol cans for CFC-12, you can send to America for example?

Ting: Yes, yes

EIA: do you need a quota for that?

Ting: yes I suppose so

EIA: but you still can

Ting: we still can

EIA: and you ship direct there

Ting: yes direct, correct...

Ting: new gas inside yes, absolutely new gas, we don’t sell recovered gas to people

**Andy Ting, *Sing Swee Bee*, (above right)** in conversation with EIA investigator about shipping virgin CFCs to the US.

(Right: *Sing Swee Bee* Business Manager Lim Han Chiong)





Right: The majority of South African gold mines are found in and around Carletonville

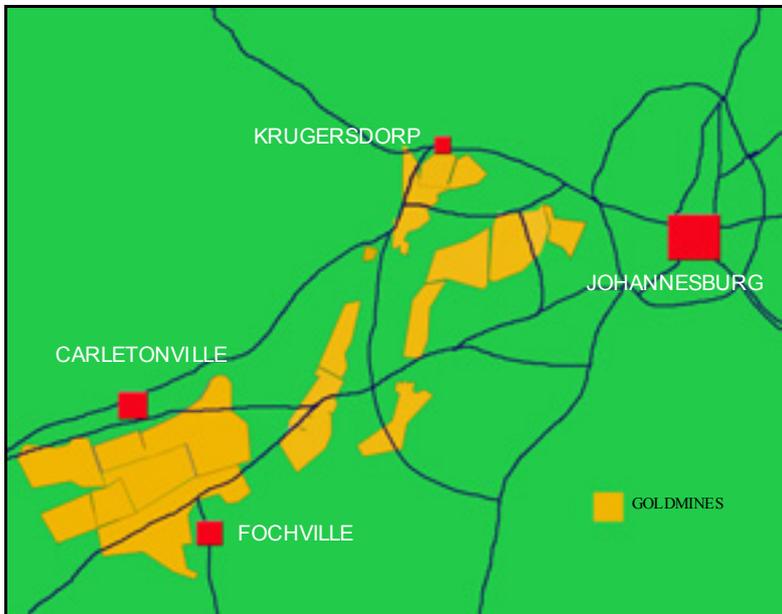
## A Golden Opportunity

While conducting investigations in Singapore, EIA uncovered an extremely elaborate CFC fraud spanning three continents and coordinated by Ong, the boss of *Leempeng*. The scam involves the smuggling of virgin CFCs into South Africa via neighbouring countries, the premature removal of CFCs from heavy refrigeration equipment in South Africa's mining sector, and the export of this material to the world's most lucrative CFC market – the US. Such orchestration shows the profits to be made from illicit CFC trading and demonstrates how the impact of Singapore-based traders on the illegal trade in ODS stretches far beyond the small island-state.

Ong revealed how he arranged for smuggled virgin CFCs to be shipped to goldmines in South Africa. The CFCs were then removed from the goldmines' chillers, which are required to cool the extensive underground tunnels. The removed material is transferred into large isotanks, and the smuggled CFCs are then placed into the chillers. The used CFCs are purchased for around US \$4 per kg, where the virgin CFCs cost around US \$2-3, providing a good profit for those within the mines involved in this scam, as well as a tidy sum for *Leempeng*, once the 'used material' is sold on the US market.

The organisation of such a scam is no easy feat, but involves a huge amount of logistical work and coordination in at least three continents, not least of which being the attempts to defraud the US EPA. To assist in this Ong employs an individual whom Ong

Below: Map showing location of gold mines



claims is known to the US authorities to state that the material is genuinely 'used' CFCs, even being photographed with the compressor to make the application more credible.

Although South Africa has prohibited the import of CFCs, they are still legally used in and imported into the neighbouring countries. Large quantities of the gas still enter South Africa through the black market, particularly through the land borders with its neighbours. On the Mozambique border the South African authorities recently successfully intercepted a consignment of 16 cylinders of CFC-12 (13.6 kg). These cylinders were heading for a company in Pretoria. The material was seized and sent off for destruction at a state of the art facility in Olifantsfontein, near Johannesburg.

The authorities in Botswana also have great concerns regarding the illegal transit trade through this country. Chinese and Indian produced material imported via Mozambique, passes through Botswana en route to South Africa. The transit trade is thought to be around ten times Botswana's consumption.

The work of the smugglers is made easier by the free movement of goods between SADC members, which allows smugglers to bring CFCs across the land borders with little chance of inspection. A lack of specialised training in identifying ODS among many of the customs officials, coupled with the underhand methods employed by the smugglers, such as mislabelling and mis-declaring the goods,



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enables CFCs to be moved around with relative ease. Companies like *Leempeng* have contacts, which are not directly linked to the Singaporean company, on the ground to execute the smuggling. Ong described the experienced smugglers as “good underwater people” and said the physical smuggling “is done by another group of people. Those are the experts, you will not get involved in that, that is not our business. That is the risky part, and anything that goes we don’t know. We know nothing”.

As a consequence of the activities of traders like Ong, the South African National Ozone Unit (NOU) has been inundated with requests by companies wanting to export CFCs declared to be reclaimed from old equipment, to the US. If an application is denied, it soon sees another application from the very same dealers detailing different routes and methods, in an attempt to get an application approved. The South Africa authorities, in collaboration with their colleagues in the US, are taking



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Left, far left & below left: Gold mining operations in Carletonville area. These are used as cover for a scam to export CFCs to the US

steps to crack down on the illegal activities, and their diligence is paying off.

One recent operation was especially successful, resulting in seizures and on-going legal proceedings. A consignment of 28.5 tonnes of CFC-12, declared as used had already received a non-objection notice from the US EPA approving its import, and was waiting for a South African export permit. Prior to authorising this the South African authorities decided to investigate further.

The CFCs were stated to have been reclaimed from a goldmine in Carletonville, an area to the west of Johannesburg with numerous gold mining operations. The exporter was a refrigeration company, based in a nearby town. The representative from this company told the authorities that the used gas had already been removed from the chillers and was stored in two isotanks, totalling 28.5 tonnes as declared on the application.

Yet a site visit to the goldmine revealed that of the four chillers in the mine, only two were operating, with the other two inactive having not been used for many years. The quantity of CFCs in the functioning chillers added up to only nine tonnes, casting severe doubt on the volumes declared as recovered by the



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**Right:** Headgear of goldmine in Carletonville



**Far right:** Refrigeration company involved in attempted export of CFCs claimed as 'used' to the US



business, the very same refrigeration company, and had not recovered any CFCs from their mining operations, but still had two large chillers using CFC-12.

refrigeration company. Analysis of samples taken from the CFCs in the isotanks revealed minimal contamination, indicating that the material had not been used at all.

The refrigeration company has delivery notes, signed by the mine, for 28.5 tonnes of virgin CFCs which were brought onto the mine's premises at around the same time. Although it was claimed that such a huge quantity of virgin CFCs were purchased in South Africa, all the evidence points to this material having been smuggled into the country<sup>25</sup>.

The environmental affairs representative for the mine, which is owned by one of South Africa's largest gold producers, informed the South African authorities that the refrigeration company had not been authorised to be on their property and that there was no agreement between the mine and the company to remove the used gas from the chillers. The shipment was prohibited, the CFCs were seized, and the South African authorities began the prosecution of those involved. The mine has also considered its own legal action against the perpetrators.

A similar case has also come to the attention of the South African NOU involving an application to export more than 14 tonnes of 'used' CFCs from another goldmine in Carletonville. When the authorities contacted the mine, it was made clear that the mine operator had never heard of the exporting

**Right:** Sample tanks sent for analysis. This revealed the CFCs declared as coming from the goldmine were not used chemical





## Round-up of Smuggling Incidents

### Japan

Recently there have been several seizures of illegally-imported CFCs in Japan. In two such cases the material came from China: in one of these 300 000 cans each containing 310g of CFCs were brought into Moji Port (Kitakyushu city), from Wuhan, China. In early 2002, a consignment of 355 500 cans, each containing 300g of CFCs, was unloaded at Yokohama Port (Kitakyushu city), from Chintao Port, China. In both cases the suspects were car dealers and repairers. Other recent cases in Japan have included 24 120 cans (250g) from Vietnam, mis-declared as paints and hidden behind paint boxes.

Two recent cases in Japan indicate a new method of transporting illegal CFCs and clearly show the large amounts of money available to successful ODS smugglers. In May 2001, two men were caught attempting to import 21 000 cans (250g) of CFCs from Thailand falsely declared as lubricant. In March 2002, smugglers attempted to import 5644 cans of CFCs (350g) from Egypt. Interestingly, in both cases, the contraband was carried by air freight, indicating the high profits available even when allowing for the cost of air transport<sup>26</sup>.

### Philippines

Successful cooperation between the Philippines NOU and Environmental Management Bureau resulted in the seizure of 15.5 tonnes of CFC-12 packaged in 13.6kg cylinders in May 2003. The importer, *Fairweather Sales Inc* had declared the shipment as the refrigerant R-134a. Using a refrigeration identifier provided by UNEP, the authorities detected that the shipment consisted entirely of R-12, despite all the labelling, cylinder markings and paperwork indicating the contents to be R-134a. Had the shipment not been stopped, the cylinders could have been sold at a high price to unsuspecting service shops and contractors all over the country believing that they bought the more expensive ozone-friendly HFC product.

Two months later the authorities seized another shipment of CFCs, this time the quantity of material was double that of the previous case.



The smugglers attempted to bring CFCs in by the frequently used scam of concealing the CFC-12 in a shipping container behind layers of the non-controlled alternative chemical, HCFC-22. The *Britches Trading Corp* applied for clearance to import HCFC-22 weighing about 31 tonnes in two 20-foot containers. Approximately 28 tonnes of CFC-12 were hidden behind three tonnes of HCFC-22<sup>27</sup>.

**Above: CFC-12 in a container concealed behind layers of HCFC-22, seized in the Philippines**

### Malaysia

Malaysian authorities recently seized around 46 000 cylinders of CFC-12, as well as a few hundred smaller cans used for DIY filling of car air-con. The seizures, in three separate incidents, were all in Johor Bahru on the Singaporean border. All the chemicals were bought in from Singapore. Malaysian Borneo also experiences CFC smuggling across the Brunei border, facilitated by Brunei's poor export ban enforcement. It is also feared that some of Malaysia's 14 registered importers, who primarily import CFCs legally from Singapore, are re-selling to Brunei and Kalimantan in Indonesia<sup>28</sup>.

### Pakistan

Pakistan has become a haven for CFC smuggling, and the illegal trade in these chemicals is increasingly fuelled by a domestic quota that is small when compared with demand and abetted by corrupt officials. The methods by which the black market traders get the material into the country are varied, including through the porous borders and also by mis-declaration in legal import and by the import of mixed containers, concealing the illegal material.

Illegal import of CFC-12 in the guise of HCFC-22 is a common method in Pakistan,



**Right: Cylinders of CFC-12 destined for the Dutch Antilles. It is feared that shipments to such offshore territories are ultimately intended for the US market**

and has been so successful that the prices of the illegal material have been driven down significantly. A new method which recently came to light in Pakistan is the appearance of cylinders of CFC-12 that appear to have been specifically manufactured to facilitate their smuggling and to bypass the controls in these chemicals. These particular cylinders, and the cartons they are contained in, are white (usually R-22 cylinders are green). The only markings on the cylinder state R-22, despite containing CFC-12. The name of the manufacturer, safety information and chemical formula do not appear.

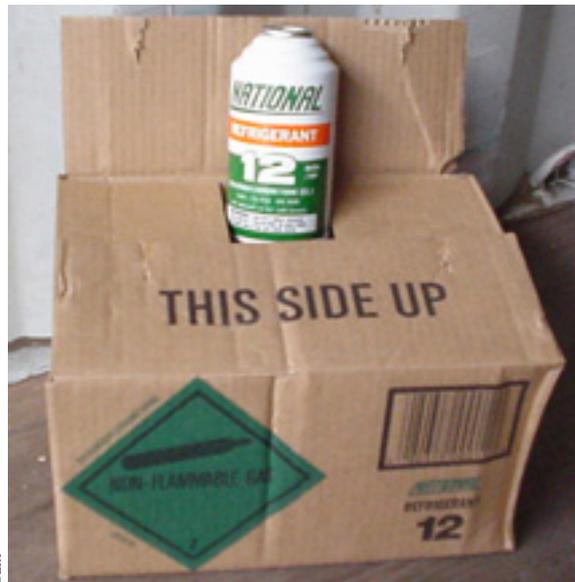
Recently an importer bought in two containers of these cylinders, clearing customs as R-22. These were then sold as CFC-12, after stencilling over the label with a "1" to enable it to be easily sold as R-12. This material is believed to be of Indian and Chinese origin. Other importers in Pakistan such as the *Zaffar Brothers Pte Ltd* imported similar cylinders from another source and used stickers rather than stencilling to modify the labels on the cylinders and cartons prior to sale. These cylinders are openly sold in Pakistan, and although some seizures have been made, huge amounts of CFCs have been illegally imported, and the Pakistan authorities have failed to curb this smuggling.

Another method by which smugglers move illegal material into Pakistan is by mis-declaring the quantity of the import. Pakistan receives bulk isotanks of R-12 from Greece, Italy and Spain. EIA has received information that three importers declare the tankers as being partially filled, although they are in fact full, and so are able to increase their import quotas by up to 60% and avoid tax and duty<sup>29</sup>.

## Overseas Territories

Overseas territories continue to feature in the transit of ODS. A number of offshore islands, particularly in the Caribbean, have emerged as key transit points in laundering CFCs and disguising the true destination of the chemicals. In one case EIA received reports of a case involving the transport of a large quantity of CFCs from China via several other transit countries to a small overseas territory in the Caribbean. The suspicion was that the material was destined for the US, as revealed by the labelling on the cylinders and cartons.

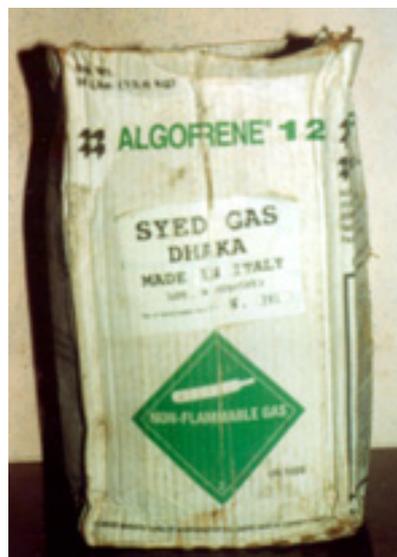
**Right: Ausimont-produced chemical which was part of a seizure of CFCs smuggled into India from Bangladesh**



Overseas territories, particularly those in the Caribbean and close to the lucrative US market provide, convenient stop-off points for ODS smugglers. US authorities have had some success in the past in seizing material destined for the US from locations, such as the Bahamas<sup>30</sup>.

## Bangladesh

Between March 2000 to April 2002, Customs Officers, Department of Revenue Intelligence and the Police in India seized more than 27 tonnes of CFCs and HCFC which had been smuggled into India from Bangladesh. In September 2002, 400 cylinders were seized from a storage facility used by the smugglers in Petrapol, India and Bhanapur in Bangladesh. The material in this seizure was Alfofrene from the Italian chemical company *Ausimont SpA*. It was imported into Bangladesh by *Syed Gas and Chemicals Ltd* in Dhaka, Bangladesh. This single operation intercepted 5.4 tonnes of *Ausimont*-produced ODS<sup>31</sup>.



## Conclusions

The Montreal Protocol has succeeded on many fronts in mitigating the harmful impact of human activities on the ozone layer, yet such advances are consistently bedevilled by the illegal trade in ODS. While part of the blame for this rests with the Montreal Protocol itself, which has been slow to respond to the threat of illegal trade, the level of sophistication demonstrated by smuggling networks presents a formidable challenge.

EIA has been tracking the illegal trade in ODS since the mid-1990s and its research shows how smuggling patterns are continually mutating in response to changing regulations and opportunities. New investigations reveal the sudden growth in suspicious activities in South Africa by brokers targeting the US market, no doubt in response to the increased vigilance by the US authorities with regard to material from China, which was shipped to the US in large quantities in the late 1990s.

One enduring feature has been the use of transit shipments to confuse the trail of illicit consignments and to outwit the enforcement authorities. EIA's investigations in Singapore, coupled with information concerning Dubai, reveal a woeful lack of control over the movement of ODS in these major ports. Both Singapore and Dubai have built strong economies founded on their role as trade hubs. Both must now accept the responsibility to adequately control and monitor the ODS flowing through their ports, rather than turning a blind eye.

Traders such as *Leempeng*, exposed by EIA's undercover investigations in Singapore, thrive on weak enforcement and the loopholes presented by transit trade. Despite the best efforts of a host of countries in establishing licensing systems to monitor ODS trade, the controlled chemicals can simply disappear into the black hole of transit trade.

There needs to be more transparency in the process of trading CFCs. Greater traceability is required for such shipments allowing the paper trail to be followed from producer to consumer, preventing the diversion of material onto the black market. Tighter controls such as the matching of import and export licences for all ODS would also help significantly in identifying smuggled material.

The successful seizures carried out by enforcement authorities in many countries are extremely encouraging, and a testament to the vital training work carried out under the UNEP DTIE programme. Integrating functions such as better cross-border cooperation into the nascent Compliance Assistance Programme of UNEP DTIE can enhance this progress.

Yet ultimately as long as ODS are produced a black market will remain. The only real solution is to accelerate the phase-out of CFCs. While the programme to speed up the phase-out of CFC production in China and India is heartening, as is the EU's recently announced reduction in CFC production, all available evidence points to a surplus of CFCs on the world market, resulting in a low price. The Montreal Protocol must respond to this challenge by bringing forward the final phase-out of CFCs.

## Recommendations

EIA urges the Parties to the Montreal Protocol to:

- Adjust the Montreal Protocol to allow a faster phase-out of CFCs for Basic Domestic Needs
- Ratify the Montreal Amendment - in the context of illegal ODS trade, ratification of the Montreal Amendment is of prime importance, as this relates, *inter alia*, to the implementation of a licensing system
- Create better cooperation between NOUs to facilitate the matching of import and export licences
- Support and adequately fund the Compliance Assistance Programme activities carried out under UNEP DTIE
- Provide adequate resources for enforcement training and equipment
- Demand greater transparency from producers and brokers involved in the ODS trade
- Strengthen controls of ODS in transit through their territories

## References

1. Häder, D.P. 1997. Stratospheric ozone depletion and increase in ultraviolet radiation. In *The Effects of Ozone Depletion on Aquatic Ecosystems* pp 1-4. Ed. M.Tevini. Lewis Publishers, Boca Raton, Florida.
2. Rai, L. C. & Mallick, N. 1998. Algal responses to enhanced ultraviolet-B radiation. *PINSA* **64**(2), 125 – 146.
3. Solcomhouse Report 2000a. Based on NASA EP TOMS satellite data, 19 October 2000.
4. Björkov, R. 2000. Update on the state of the ozone over Northern and mid-polar latitudes. *World Meteorological Organisation*, 16 March 2000.
5. Shindell, D.T., Rind, D. & Lonergan, P. 1998. Increased polar stratospheric ozone losses and delayed eventual recovery owing to increasing greenhouse-gas concentrations. *Nature*, **392**, 589 – 592.
6. Newman, P.A. 2000. Press briefing, American Geophysical Union's Annual Fall Meeting, December 5, 2000.
7. Clark E.D. 2001. Ozone depletion and global climate change: linkages and interactive threats to the cetacean environment. *Paper SC/53/E2 submitted to the International Whaling Commission Scientific Committee*.
8. World Health Organization & United Nations Environment Programme. Children Suffer Most from the Effects of Ozone Depletion. Press Release. Geneva/Paris 16 September 2003.
9. Environmental Effects of Ozone Depletion and its Interactions with Climate Change: 2002 Assessment. *United Nations Environment Programme*, Nairobi 2003.
10. Environmental Effects of Ozone Depletion: 1998 Assessment. *United Nations Environment Programme*, Nairobi 1998.
11. Karentz, D. 1991. Ecological considerations of Antarctic ozone depletion. *Antarctic Science* **3**(1), 3 – 11.
12. Madronich, S., McKenzie, R.L., Björn, L. O. & Caldwell, M.M. 1998. Changes in biologically active ultraviolet radiation reaching the earth's surface. *Journal of Photochemistry and Photobiology B: Biology*, **46**, 5 – 19.
13. Clark E.D. 2000. Ozone depletion: potential impact on the cetacean environment. *Paper SC/52/E10 submitted to the International Whaling Commission Scientific Committee*.
14. Häder, D.P., Worrest, H.D., Kumar, H.D. & Smith, C.S. 1995. Effects of increased solar ultraviolet radiation on aquatic systems. *Ambio*, **24**, 174-180.
15. Environmental Effects of Ozone Depletion and its Interactions with Climate Change: 2002 Assessment. *United Nations Environment Programme*, Nairobi 2003.
16. Environmental Effects of Ozone Depletion and its Interactions with Climate Change: 2002 Assessment. *United Nations Environment Programme*, Nairobi 2003.
17. Environment Canada. Global Benefits and Costs of the Montreal Protocol on Substances that Deplete the Ozone Layer. Applied Research Consultants, 1997.
18. Unfinished Business: The Continued Illegal Trade in Ozone Depleting Substances and the Threat Posed to the Montreal Protocol. *Environmental Investigation Agency Report*, November 2001.
19. UNEP Technology and Economic Assessment Panel Report 2002. Volume 2.
20. US Department of Justice. Personal communication to EIA, October 2003.
21. Personal communication to EIA, 2002.
22. Confidential personal communication to EIA, 2003.
23. Transparency International Corruption Perceptions Index. Berlin, August 2002.
24. World Trade Atlas, Global trade Information Services 2003.
25. Confidential personal communication to EIA, 2003.
26. Personal communication to EIA, 2002.
27. Philippines Customs Service, Personal communication to EIA, October 2003.
28. SEAP Customs-Ozone Officers Cooperation Workshop Phuket, Thailand 2002.
29. Confidential personal communication to EIA, 2003.
30. Confidential personal communication to EIA, 2003.
31. Confidential personal communication to EIA, 2003.



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