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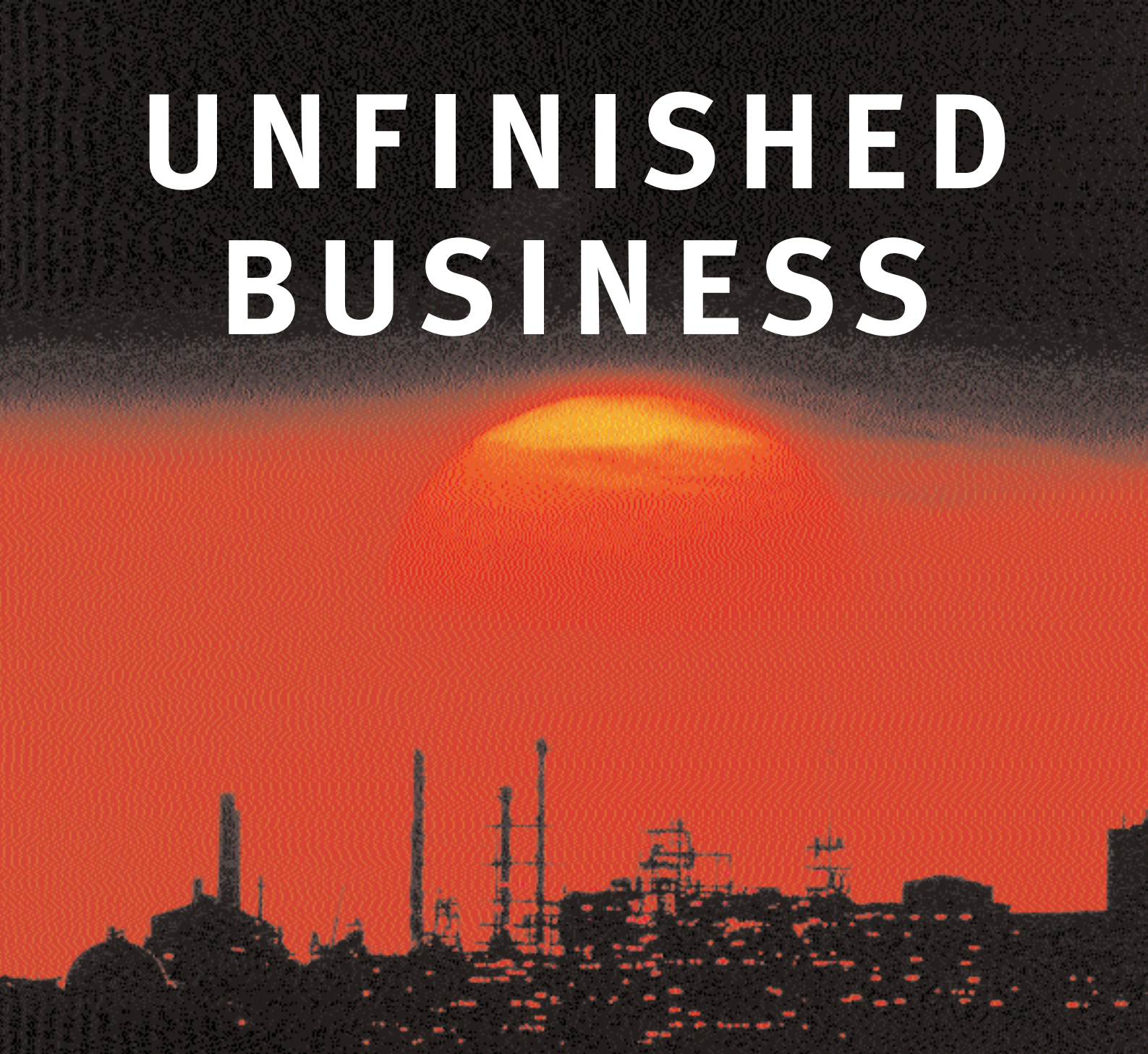

The Continued Illegal Trade in Ozone-Depleting Substances and the Threat Posed to the Montreal Protocol Phase-out

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Contents

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ODS phase-out at a glance

Under the Montreal Protocol and its amendments, ozone-depleting substances (ODS) are to be reduced and eliminated through the development of chemical substitutes and alternative manufacturing processes – elimination is the final objective.

Within the Montreal Protocol, the Montreal Amendment is crucial in the context of controlling illegal trade. The Montreal Amendment of 1997 introduced a licensing system for the import and export of new, used, recycled and reclaimed ODS. To date this Amendment has been ratified by 63 countries.

Montreal Protocol 1987

Developing Countries (Article 5)		Industrialised Countries	
Baseline consumption	Phase-out schedule	Baseline consumption	Phase-out schedule
Average of 1995-1997	07/1999: freeze 2005: -50% 2007: -85% 2010: -100%	1986	07/1989: freeze 1994: -75% 1996: -100%

Montreal Amendment 1997

Developing Countries (Article 5)		Industrialised Countries	
1/1/2000	Licensing system of import & export (new, used, recycled, reclaimed)	1/1/1999	Licensing system of import & export (new, used, recycled, reclaimed)

Front cover photo: David Ellison/Environmental Images. Back cover photo: Graham Burns/Environmental Images

Introduction

The Montreal Protocol on Substances that Deplete the Ozone Layer is generally acknowledged as the most successful international environmental treaty and an outstanding model of international cooperation. It has successfully reduced much of the world's reliance on ozone-depleting substances (ODS), and adherence to its phase-out schedule should eventually see the full recovery of the fragile ozone layer.

Yet the present state of the ozone layer gives cause for concern and has dire implications for ecosystems and human health. Every year the ozone hole over Antarctica grows bigger, and a similar hole is predicted to develop over the Northern Hemisphere during the next twenty years.

Initial predictions for full recovery by 2050 now seem optimistic, and the Montreal Protocol process continues to be undermined by the illegal trade in ODS. The Environmental Investigation Agency (EIA) has been tracking the black market in chlorofluorocarbons and halons since the mid- 1990s and has presented detailed information on the main routes, smuggling methods and companies involved to the Parties to the Montreal Protocol and to enforcement agencies in many countries.

Despite the existence of a pervasive and continued illicit trade in ODS the response by the Parties has been slow and ad-hoc. In the mid-1990s the illegal trade was estimated at 20 000 tonnes a year, but it was not until 1997 that a licensing system was introduced, and even now only 63 parties have ratified the relevant amendment.

There have been notable successes in curbing illegal trade in both the US and EU. The enforcement authorities in the US have led the world in combating ODS traffickers, while the EU has introduced a ground-breaking sale and use ban for CFCs and halons. Yet black market operations are quick to scent new opportunities, and now a worrying increase in ODS smuggling is emerging in 'Article 5' or developing countries.

EIA has conducted detailed field investigations to expose this illegal trade in one part of the world – the India and Nepal border – yet this is just the tip of the iceberg. If smuggling activities become entrenched in Article 5 countries the Montreal Protocol phase-out schedule will be jeopardised.

EIA's investigations have also revealed the key role played by transit countries such as Dubai in the United Arab Emirates in facilitating ODS smuggling, and the appearance of material manufactured by European chemical companies on the black markets of developing countries.

It is regrettable that while the new EU legislation curbs recycling of ODS for export, it does not tackle continued production of virgin ODS. In some cases, the producers are laissez faire when it comes to checking where the ODS end up. At one of the largest remaining CFC production plants in Europe, located in the Netherlands, around 80 per cent of CFCs are sold to local brokers, ostensibly for legitimate shipment to Article 5 countries, but in reality are difficult to trace.

The new patterns of ODS smuggling demand creative enforcement responses. The Parties are currently debating mechanisms to enhance the fight against ODS smugglers, principally through tools such as better customs coding and information exchange.

EIA believes that an effective step would be the creation of an Illegal Trade Prevention Task Force within the Montreal Protocol regime, and the creation of a full-time enforcement coordination post within the Ozone Secretariat. Compared with other Multilateral Environment Agreements the Montreal Protocol has lagged behind in terms of enforcement. It is time to redress this imbalance and ensure the phase out schedule is adhered to over the next decade and not undermined by illegal trade in ODS

Julian Newman
Senior Investigator, EIA
October 2001

The Montreal Protocol process continues to be undermined by the illegal trade in ODS

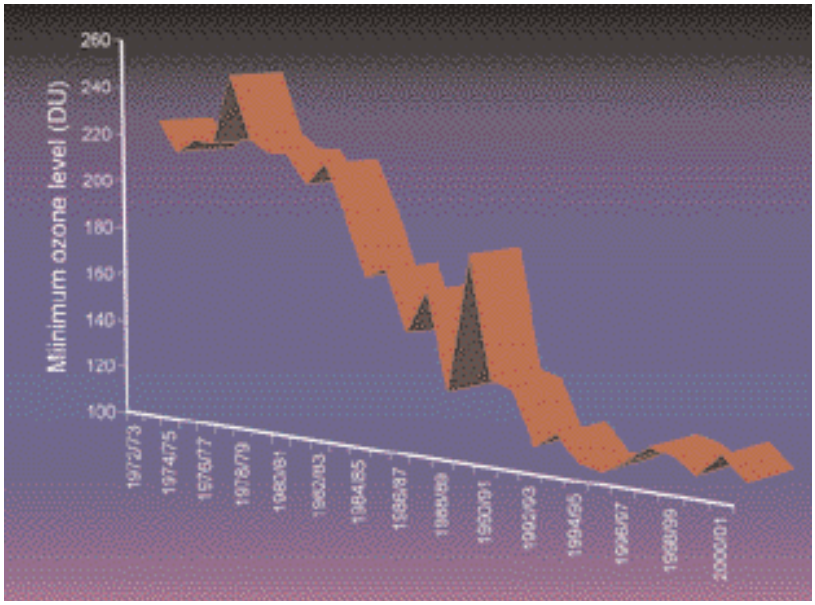
© Ezra Clark/EIA

Ozone Layer Update

Life on Earth depends on the ozone layer to screen harmful ultraviolet solar radiation (UV). This stratospheric ozone forms a layer extending from 20 to 50 km above the earth's surface and removes some 99 per cent of the UV[1]. 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 into the stratosphere, causing higher quantities of ultraviolet radiation to reach the Earth's surface. A decrease of one per cent in the ozone layer causes a 1.5 – 2 per cent increase in UV-B transmission[2].

Below: **Antarctic ozone depletion is becoming progressively worse each year**

Bottom: **The 2000 ozone hole over Antarctica was the largest ever recorded, reaching a maximum size of 28.4 million km²**



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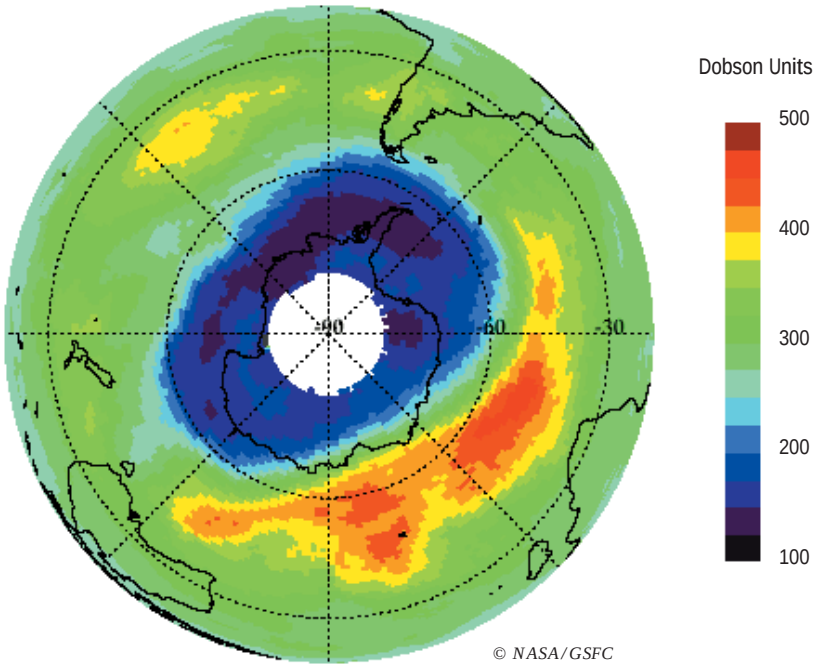


© NASA/GSFC

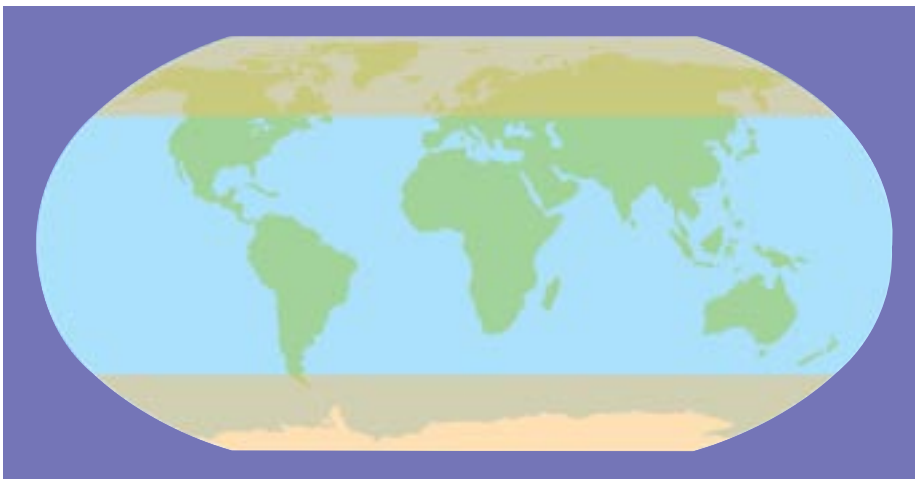
At this point in time, the ozone layer is more depleted than ever before. Decades of assault from man-made chemicals, notably chlorofluorocarbons (CFCs), halons and methyl bromide, have caused substantial thinning of the ozone layer, leading to an increase in the amount of UV reaching the Earth's surface. The ozone hole over Antarctica grows bigger every year, and in September 2000 extended over a city for the first time. The portents are for a similar hole to appear over the Northern Hemisphere during the next 20 years.

While the Montreal Protocol has dramatically reduced the use of ozone-depleting substances, the original projections for full recovery of the ozone layer by 2050 appear increasingly optimistic, due to interactions with climate change, non compliance with the Protocol and the illegal trade in ODS.

Antarctica

Although systematic measurements of stratospheric ozone began in the 1950s[3], it was only with the discovery of the ozone hole measured over Antarctica in 1985 by the British Antarctic Survey[4,5] that the effects of ozone depletion were generally recognised. Following the discovery of this hole, satellite measurements confirmed that the ozone loss has reappeared in the austral spring for all successive years since 1985, and generally the Antarctic ozone hole grows bigger and lasts for longer each year.

By mid-September 2001 this hole covered an area of 24 million km² and significant depletion extended round the Southern Ocean[6]. The largest and most severe Antarctic ozone depletion event to date occurred in the austral spring of 2000. The US National Aeronautical and Space Administration (NASA) measured its maximum size at 28.4 million km² on the 10th September 2000[7,8]. In early October 2000 minimum ozone values were amongst the lowest on record; some 40 per cent of normal values[8]. In mid- to late October 2000, the ozone hole drifted over areas of Argentina, Chile and the Falkland Islands, including the cities of Punta Arenas and Ushaia, where ozone levels were reduced by up to 70 per cent[9]. For the first time the reality of living under an ozone hole became clear as the public were advised to stay indoors during the peak hours of 11 am and 3 pm to avoid exposure to the harmful UV rays.



Left: **Predicted extent of area affected by Northern Hemisphere ozone hole by 2020. Also showing the area potentially affected by the current ozone hole.**

Northern Hemisphere

Ozone losses over the Arctic were smaller compared with 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 mid-latitudes as well as polar latitudes of the Northern Hemisphere have been observed in the winter/spring seasons of the majority of years over the last decade. These reductions in ozone generally reached 20-30 per cent of pre-1976 averages[10]. Recently significant depletion of the ozone layer over the Arctic, Europe and North America has occurred, reaching 60 per cent in some areas[11].

Considerable losses of stratospheric ozone were observed in the Arctic in 1999, and the highest ever local ozone loss observed at any altitude was observed in this region, with losses recorded at greater than 70 per cent[12]. In November 1999, in addition to depleted ozone levels over the entire Arctic, there was evidence of significant ozone layer thinning over the United Kingdom, northern Germany, the Netherlands, southern Sweden, Denmark and the Baltic States[13]. Although stratospheric ozone depletion in the last few years in the Northern Hemisphere has not been as high as levels reached in some years in the 1990s[14,15], this weaker than usual ozone depletion reflects natural variations that affect seasonal losses. This is due to atmospheric conditions in the stratosphere, principally warmer temperatures, rather than a decrease in the concentration of ozone-depleting substances in the atmosphere.

Antarctic ozone loss is predicted to increase over the next 5-20 years, with recovery taking several more decades[16]. It is also predicted that Arctic ozone losses will persist into the 2050-2070 period[17], before starting to recover, although it is thought full recovery may take many more decades. The depletion of atmospheric ozone over the Arctic in 1999 was of a similar level to that seen at the time of the onset of the Antarctic ozone hole in the mid-1980s[18]. It is predicted that Arctic ozone depletion will become more severe in the near future, with an ozone hole occurring over the Arctic of similar magnitude to that which currently develops over the Antarctic within the next 20 years[19]. Such a development has profound implications for the more densely populated regions of the Northern Hemisphere.

Interactions of Global Climate Change and Ozone Depletion

In the past, ozone depletion and climate change were considered to be distinct and separate phenomena. Recently it has been recognised that there are linkages and interconnections between the processes causing ozone layer thinning and global warming[16,20,21]. For more than a century, anthropogenic activities have altered the composition of the atmosphere, by releasing new chemicals and changing the abundance of naturally occurring gases. Changes in anthropogenic inputs to the atmosphere are interconnected and create feedbacks that effect the atmospheric chemistry and dynamics responsible for ozone depletion and global climate change[22]. These interactions can be direct, such as temperature affecting the rate at which ozone depletion occurs, or can be through the interaction of different and often complex processes[23].

Ozone depletion and global climate change are likely to be the most serious crises ever to threaten ecosystems. The interrelationship between them indicates the pressing need for new strategies to understand and address both processes simultaneously. Unless the effects of the linkages and interactive nature of these phenomena are taken into account in appraisals of pressures on ecosystems as well as on human health, their effects may be significantly underestimated.

As a consequence of ozone layer thinning, spawning fish and other marine fauna suffer damage

The Impacts of Ozone Depletion

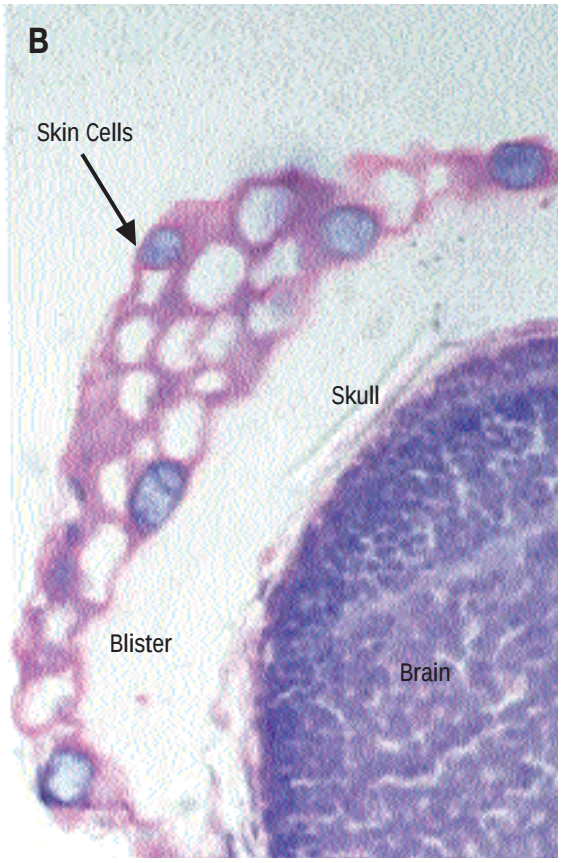
Ultraviolet radiation, particularly the shorter wavelength UV-B (280-315 nm) and UV-C (below 280nm nm), is known to detrimentally affect biological and chemical processes of living organisms[1,2]. Exposure to elevated levels of ultraviolet radiation can cause adverse effects on growth, photosynthesis, protein and pigment control, reproduction and can cause damage to DNA[3]. In humans, exposure to ultraviolet radiation can manifest itself in the development of skin cancer, cataracts and weakening of the immune system.

Ecology

Marine foodwebs, based primarily on phytoplankton, are sensitive to alterations in its biomass, and so impacts on phytoplankton will have corresponding repercussions in ecosystems. More than 50 per cent of the Earth's primary productivity derives from aquatic ecosystems[4], so UV-B induced inhibition of the organisms responsible for this productivity – phytoplankton – has potentially devastating consequences.

Scientists have constructed models to predict how ecosystems will respond to elevated UV-B radiation. One such model predicts that following a 17 per cent decrease in primary production due to elevated UV-B radiation, a 27 per cent decrease in fish and invertebrates would result. Losses could be even greater as damage to early stages of juvenile fish, which are more sensitive to UV-B exposure, are not considered in this model[5,6] .

As a consequence of ozone layer thinning, spawning fish and other marine fauna suffer damage similar to sunburn as well as impaired development and other abnormalities. In springtime, when ozone depletion is greatest and UV-B levels are at their maximum, many fish species are also spawning. At this stage respiration is through their skin as their gills are not developed. The UV-B rays blister the skin of these young fish causing it to thicken. This slows down the uptake of oxygen, stunting growth and leaving them vulnerable to predators[7]. UV-B induced dermal sun damage and melanomas are reported in a variety of fish species[8, 9,10]. Recent research has also revealed that UV-B radiation can interact with hydrocarbon pollutants in the sea, making them up to 10 000 times more toxic[11].



Right: **Section through the head of sole larvae. (A) healthy fish: note single layer of skin cells. (B) sunburned skin: note increased layers of skin cells and gap (blister) between skin and the skull**

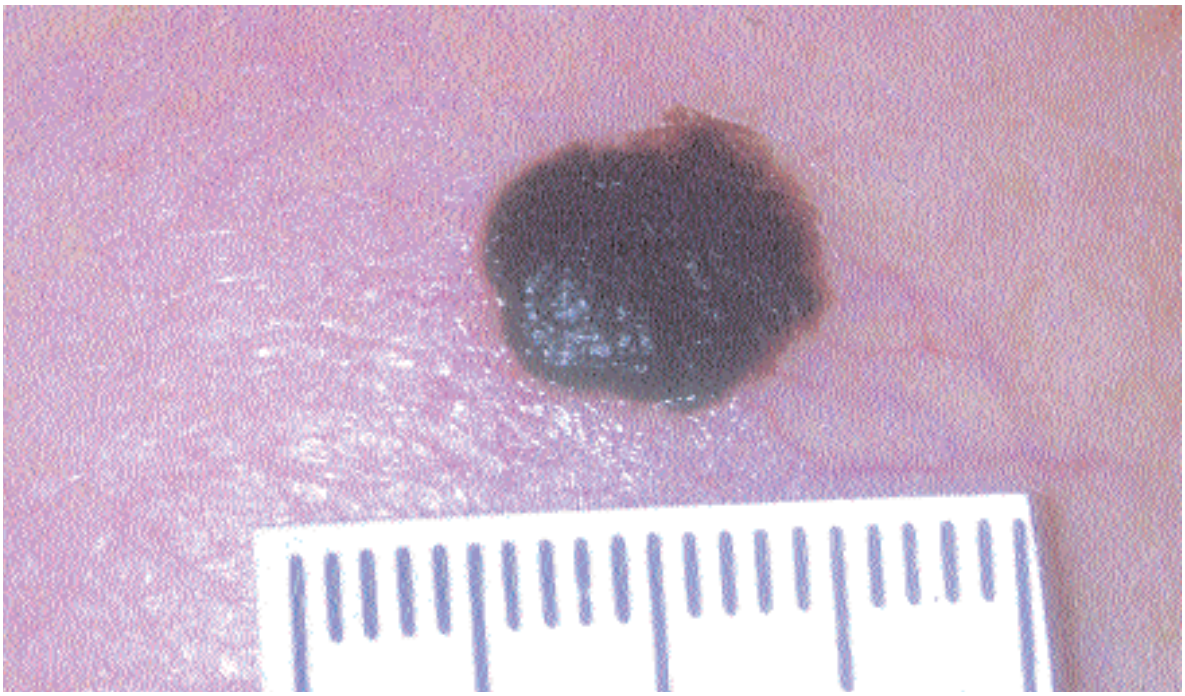
Human Health

Exposure to ultraviolet radiation also directly impacts human health. These negative health effects include photoaging of the skin, skin cancer, cataracts, and incidence of ocular melonoma and squamous cell carcinoma of the eye. Although it is clear that exposure to UV-B radiation in humans is dependent on a variety of conditions – primarily climatic and behavioural effects – the US Environment Protection Agency developed a model incorporating the ozone depletion scenarios developed by the Scientific Assessment Panel of the Montreal Protocol[12]. This predicted that, even with full compliance with the various amendments and adjustments to the Montreal Protocol, more than 25 million additional cases of cataracts are expected worldwide by 2050. This model was based on US data and it is possible that under-nourished populations may be at greater risk[13].

A similar model provides estimates of the additional cancer risks in populations annually, based on estimated changes in UV-B over time[14,15]. Assuming full worldwide compliance with the Montreal Protocol and amendments it is predicted that by 2060 there will be approximately 90 million additional cases of skin cancer[13].

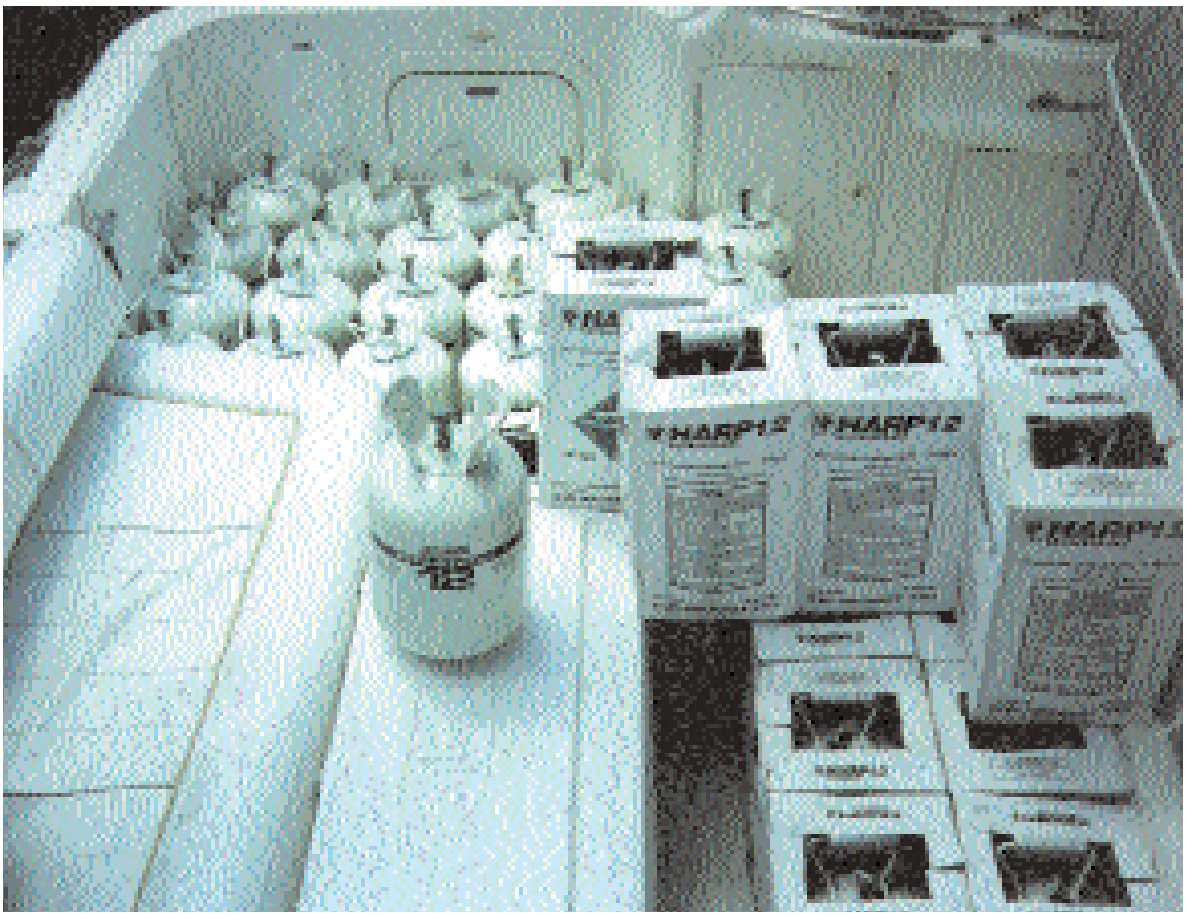
Elevated exposure to UV-B can also have adverse effects on the immune system, depressing resistance to certain tumours and infectious diseases, impairing of vaccination responses and possibly increasing the severity of some auto-immune and allergenic responses[13].

Above: **More than 25 million additional cases of eye cataracts are expected by 2050**



Left: **Malignant melanoma. 90 million additional cases of skin cancer are predicted by 2060**

Estimates state that around 20 per cent of all ODS traded in the mid-1990s came from illegal sources



© US Customs

Right: **Consignment of 90 cylinders of CFCs, concealed aboard a boat from the Bahamas, seized in Florida, September 2000**

Enforcing the Phase-out

Illegal trade in ODS first came to light in the mid-90s, and caught enforcement agencies off guard, especially in Europe, where action against this activity has lagged behind the more concerted efforts seen in the US. The possibility of a black market was certainly not foreseen by the legislators who framed the Montreal Protocol and its early amendments. With hindsight, licensing systems should have been implemented at a much earlier stage, rather than waiting until 1997, by which time smuggling had become entrenched and around 20 000 tonnes of ODS were being traded illegally worldwide every year. This is equivalent to over 12 per cent of global ODS production at that time, although other estimates state that around 20 per cent of all ODS traded in the mid-1990s came from illegal sources[1].

In the late 1990s, EIA uncovered sophisticated networks supplying illegal ODS mainly from Russia and China to the markets of the US and EU[1,2]. Recently there have been encouraging signs that the smuggling of ODS into the markets of the US and EU has declined. In the US the procedures for importing ODS have been tightened, and the activities of the multi-agency 'US Task Force on ODS Smuggling' have deterred many of those involved in the illicit trade, while the EU has implemented a sale and use ban for CFCs and halons, making illicit market activity easier to spot.

Yet the US remains a lucrative market for ODS smugglers, with Europe continuing to be used as a trans-shipment point for black market CFCs. A recent case involved the movement of CFCs from the Far East through two European ports, with the declared final destination being a Caribbean island, although markings on the packaging indicate that the US was the ultimate destination[3]. Last year a seizure of CFCs in Florida took place, with the contraband carrying the HARP brand name used by the British company HRP Refrigerants[4]. There are also indications that despite the EU sales ban there is still an active market for these chemicals in many member states[5]. EIA has received reports of refrigeration companies in Denmark discovering cylinders of CFC-12 (Dichlorodifluoromethane) falsely labelled as HCFC-22 which are smuggled in from Lithuania, Poland and Russia[6].

An additional tool in the fight against the illegal trade has been the introduction of licensing systems for movement of ODS,

introduced under the Montreal Amendment of 1997. Despite this, EIA has observed new trends in the patterns of ODS smuggling since the late 1990s, with Article 5 (developing) countries experiencing an upsurge in contraband ODS movement.

The 1999 freeze, dictated by the Montreal Protocol phase-out schedule, required that from July of that year Article 5 countries have had to freeze their CFC consumption at a base-level set by average consumption between 1995 and 1997. Although it is only two years since the July 1999 freeze, smuggling cases are increasingly emerging in many Article 5 countries. The fear is that if this freeze can prompt ODS smuggling, it is inevitable that illegal trade will continue to proliferate as Article 5 countries progressively phase-out their consumption, particularly since a 50 per cent cut is required by 2005. As the phase-out schedule progresses, legitimate supplies will decrease and market prices will go up, offering incentives to ODS smugglers.

Case Study: Smuggling along the India and Nepal Border

India is both a major producer and consumer of CFCs. In several instances in the mid-1990s illicit material from India was seized in the US and Indian-based brokers attempted to supply illegal ODS to the EU, even acting as brokers for Chinese-produced material. Yet India is now experiencing a growth in black market CFC imports. Between early 1999 and March 2000 around 880 tonnes of ODS were smuggled into India, which is approximately 12 per cent of national consumption.

The role of the neighbouring countries of Nepal and Bangladesh is key to understanding the mechanics of India's growth in illegal imports. In February 2000, EIA travelled to the India-Nepal border to probe the burgeoning smuggling of ODS in the region and to expose the methods and operators involved.

Nepal's Inflated Imports

As a mountainous land-locked country Nepal has a customs arrangement with India to enable it to import goods via India, called the 'Customs Transit Declaration'. Cargo is landed at Indian ports such as Calcutta and is sealed by Indian customs. The containers are then transported by road under seal to one of the authorised India-Nepal border points, for clearance by Indian customs. If the seals are intact, the goods are transported over the border to Nepal where the seals are opened and the goods inspected.

CFCs are imported into Nepal by this method effectively unhindered by the lack of import controls and low level of import tax (approximately 5 per cent compared to India's

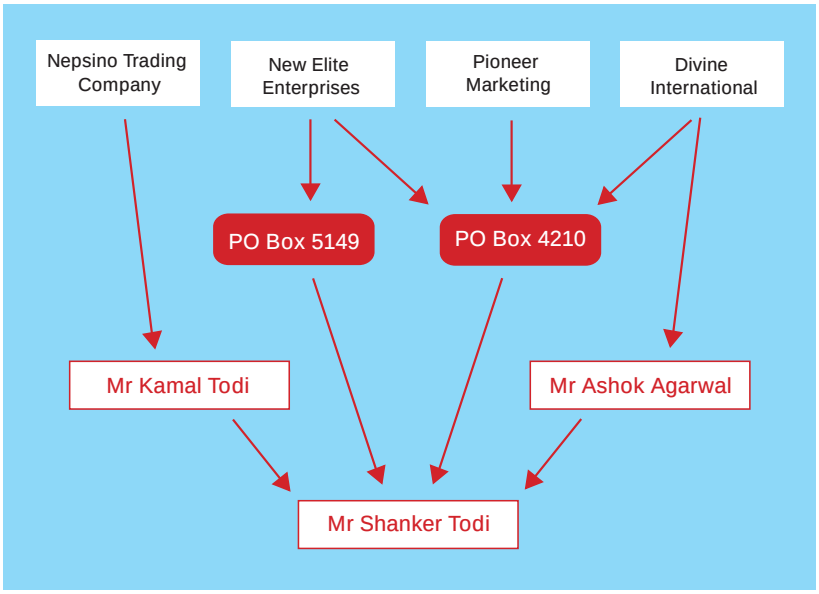
Between early 1999 and March 2000 around 880 tonnes of ODS was smuggled into India

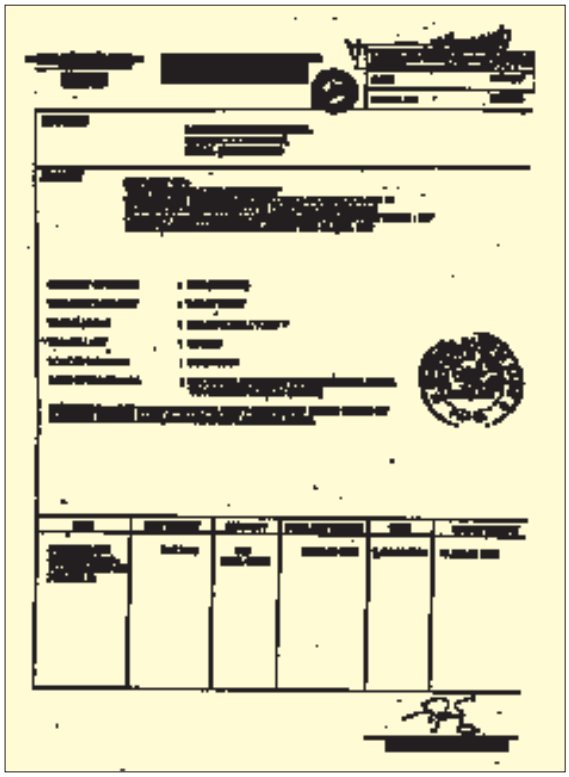
rate of 54 per cent for CFCs). The material is then delivered to various locations in Nepal, where a small percentage is used for domestic consumption, the rest is turned-around and smuggled back into India. The prevalence of this fraud is vividly illustrated by the import figures for Nepal; between January 1999 and June 2000 Nepal imported more than 422 tonnes of ODS, although the country's annual consumption is only approximately 50 tonnes.

Study of Customs Transit Declaration and Customs Clearance Documents reveal that a large quantity of the CFCs imported into Nepal and then smuggled into India were produced in Europe. A name which continually cropped-up as a manufacturer of the CFCs was Elf Atochem (Atofina). This French company exports large quantities of CFCs, manufactured and frequently shipped from Spain but trans-shipped via Dubai or Singapore. Many companies in Singapore are involved in the shipment of CFCs to Nepal including; A&P Air Conditioning Engineering Works, Elf Atochem (Atofina) and Kaltech Engineering & Refrigeration Pte Ltd. Other companies that exported significant quantities of CFCs included Naser Al Sayer & Co. and ASHAI General in Dubai, and Shanghai High Pressure Container Company Ltd in China.

Below: **Shanker Todi's web of companies involved in illegal CFC trade in Birganj**

Below right: **Customs Transit Declaration detailing import of CFCs by Divine International – one of Shanker Todi's many companies**





A Licence to Smuggle

Nepal has recently introduced an ODS licensing system. From February 2001 the export of ODS is banned and a licence is required to import ODS. Yet a licensing system is only as good as the effort put into enforcing it. Nepal has now laid down the permitted quantity of imports of ODS from 26 tonnes in 2001, scaling down to zero in 2010. A letter of credit for import of ODS is also required from a commercial bank once the application has been approved by the Ministry of Population and Environment.

Despite the official ceiling for imports, traders in Nepal currently possess letters of credit for the import of ODS totalling 368 tonnes for 2001. All of these letters of credit were opened between 20th and 27th February (the former date is when the Regulations were approved by the cabinet, the latter when these were made public). All of these letters of credit were opened in contravention of the directives of the Ministry of Population and Environment. If this quantity of ODS is allowed to be imported, it will make a mockery of the legislation, as it is considerably more than the entire quantity of CFCs permitted by all importers in Nepal over the next 10 years – the period of Nepal's proposed phase-out.

Unfortunately this process has already begun, and companies involved in the smuggling have moved more than 300 tonnes of ODS to the Indian side of the border area and are applying to the Nepalese government to issue a one-off permit to import these. In a four week period in 2001 around 60 tonnes were cleared and moved to the border towns ready to be smuggled back into India.

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© Debbie Banks/EIA

EIA's on-the-ground investigations reveal that Todi is the main broker for the illicit trade in ODS passing through Nepal

Smuggling Operations

One of the first indicators of widespread smuggling of CFCs into India was the emergence on the market of 13.6kg disposable cylinders, which are widely used on the international market but banned in India.

Through scrutiny of seizures made by the Indian authorities and conversations with industry sources EIA traced the route followed by the contraband material to Nepal, and the border town of Birganj – the base of operations for a smuggling network headed by Shanker Todi.

EIA's on-the-ground investigations reveal that Todi is the main broker for the illicit trade in ODS passing through Nepal. He is linked to most of the Nepalese companies importing ODS, (see chart opposite) and works through an associate called Ashok Agarwal to move the material back into India, mainly through the Birganj border crossing.

Consignments of CFCs in 13.6kg cylinders, which are enclosed in cardboard cartons, are taken to storage facilities in Birganj town. EIA observed cylinders of CFCs being moved between different storage areas before being packed in sacks. The disguised cylinders are then taken to the village of Inarwa on the Indian border. Under the cover of night these are smuggled into India in small batches. Alternatively smugglers move greater quantities of CFCs by night, in tractors and trailers, by more remote and dangerous routes via Biswaha or Sikta.

A second smuggling route exists at the border

© Debbie Banks/EIA

Above left: **Illegal disposable cylinders of CFC-12 photographed in Kaniska Motors, Delhi**

Above: **CFCs stored in Birganj, destined to be smuggled into India**

Left: **Ashok Agarwal (centre), key player in Shanker Todi's Nepalese smuggling network**

© Ezra Clark/EIA

Left: **CFCs are decanted into 105kg cylinders at the Hilltake plant in Biratnagar and smuggled over the Indian border.**

town of Biratnagar. Here smugglers decant CFCs from the easily-recognisable 13.6kg disposable cylinders into larger 105kg cylinders widely used on the Indian market. This method emerged as a response to the seizure of disposable cylinders made by the Indian authorities.

A company called Hilltake, whose principal business is the manufacture of water storage tanks, a process which does not require CFCs, is also involved in smuggling. It imports large quantities of CFCs in disposable cylinders through the Customs Transit Declaration system via Calcutta. In the Hilltake plant on the outskirts of Biratnagar, the CFCs are decanted into larger cylinders. Frequent deliveries of ice are arranged by Hilltake to aid the decanting process. Until recently Hilltake moved considerable quantities of these cylinders across the Indo-Nepal border, declaring them as empty. Acting on a tip-off, Indian Customs officials at Patna intercepted and seized 79 full cylinders in April 2000.

Since this seizure Hilltake has altered its method, and has been using rickshaws to move one or two cylinders at a time to the border crossing at Jogbani where they cross unchecked. The cylinders are stored overnight at the Jogbani

Right: **Hiltake's main business manufacturing water tanks does not involve CFCs, yet it imports large quantities**

© Ezra Clark/EIA

bus stand and loaded the next morning on to public buses bound for Patna. Surveillance of this new smuggling method has allowed customs to seize a further six cylinders on the 5th February 2001 and six cylinders on 9th February. Displaying the adaptability of this illegal trade, EIA is now aware of a new route used by the smugglers to the east of Biratnagar and Jogbani.

Fighting the Tide

When EIA met with government officials in India and discussed the smuggling problem it was clear that although some officials refused to admit that a problem exists with illegal ODS trade, others were dedicated and were having significant, but isolated successes, often in very difficult conditions. One senior customs officer in the town of Motihari has been responsible for the confiscation of 676 cylinders in nine different seizures in a year, while another official in Patna organised the seizure of cylinders smuggled via Hilltake in April 2000. These two individuals have combined their expertise and recently seized over 12 tonnes of illegal CFCs.

Despite the brave efforts of some dedicated officials, they are fighting a losing battle given the magnitude of the smuggling operations and length of the India/Nepal border; it is simple enough to circumvent the official crossing points unchecked. It is evident that the officials are only able to capture a small proportion of the material that crosses the border every day. Additional staff, extra vigilance and training could have significant positive effects, but the solution to this illegal trade must lie in restricting the source – the excessive import of CFCs into Nepal.

© Ezra Clark/EIA

Above: **One of the many seizures of material imported into India from Biratnagar**

Other Smuggling Methods

CFCs are also smuggled into India by mis-declaration through various ports and 'Inland Container Depots' (ICDs). EIA obtained information about the efforts of customs officials at the Varanasi ICD who made a massive seizure of CFC-12 in 13.6kg disposable cylinders on the 3rd April 1999. This seizure of 1100 cylinders came from a single consignment, the value of which was underdeclared, and the importer, who promptly disappeared, did not hold an import licence.

Similar seizures have been made all over India by customs officials at ICDs such as Mumbai, Jaipur and Indore, where consignments of CFCs have been seized which were illegally imported through mis-declaration and under-invoicing.

EIA has also received reports of CFCs being illegally imported into India in an operation involving ship breaking and gas-charging of operational ships[7].

Officials refused to admit that a problem exists with illegal ODS trade

Right: **Consignment of 1100 cylinders of CFC-12, seized at Varanasi Inland Container Depot**

© Ezra Clark/EIA

© Ezra Clark/EIA

Right: **Part of the seizure, made by Calcutta customs, of 281 cylinders of CFCs and HCFCs smuggled from Bangladesh**

An Overview of ODS Smuggling in Article 5 Countries

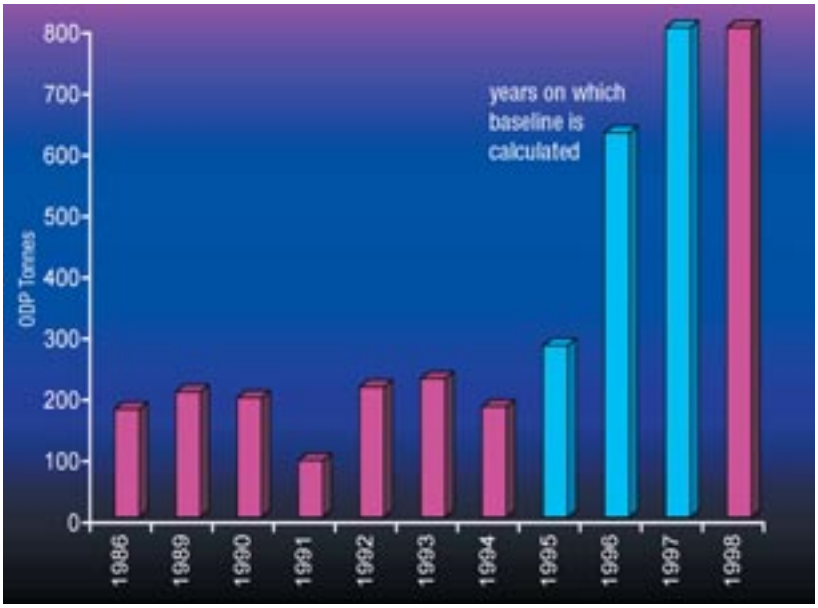
Bangladesh

Smuggling activities into India are not confined to its border with Nepal – concerted efforts are also being made by Bangladeshi firms to move contraband ODS onto the Indian market. Customs officers in the Indian city of Calcutta recently seized 281 illegal disposable cylinders of CFCs and HCFCs shipped via Bangladesh.

The gas cylinders are generally packed in sacks, and moved over the border in small quantities. They are concealed and transported in vans, cycle rickshaws, and other vehicles. EIA recently became aware of CFCs decanted into oxygen cylinders and carried in headloads from Bangladesh to India. The material is then collected together and transported in larger quantities around India.

Since 1995, there has been a surge in the amount of ODS imported into Bangladesh. In 1994 only 181 ODP tonnes were imported, but by 1997 imports reached 832 ODP tonnes. This has resulted in a considerable increase in the baseline on which Bangladesh's phase-out schedule is calculated (from the average of the 1995-1997 'consumption'). This elevation of the baseline allows Bangladesh to import significantly more ODS than required for its domestic needs over the phase-out period, creating a surplus bound for the black market.

Below: **Bangladesh's imports of ODS dramatically increased over the years on which their baseline consumption was calculated**



Source: Ozone Secretariat

Pakistan

The smuggling of CFCs into Pakistan has risen over the last couple of years, fuelled by a domestic quota that is small when compared with demand and abetted by corrupt officials. Pakistan's Ministry of Commerce has in the last few years been issuing import

authorisation to companies who are not involved in the refrigeration business, and have never before imported refrigerants. A common smuggling method into Pakistan is misdeclaration of the goods – CFCs are not listed under customs Chapter 29, which covers ODS, but are instead listed as personal effects and so evade customs checks.

In September 2000, several 20 foot containers of CFC-12 and CFC-11 were illegally imported into Pakistan through the Multan City Dry Port. The CFCs were falsely declared as HCFC-22, with the smugglers placing a single layer of HCFC-22 cylinders next to the door of each container to disguise the contraband[8]. This method has been widely used in the past by Chinese brokers sending illicit ODS to Europe.

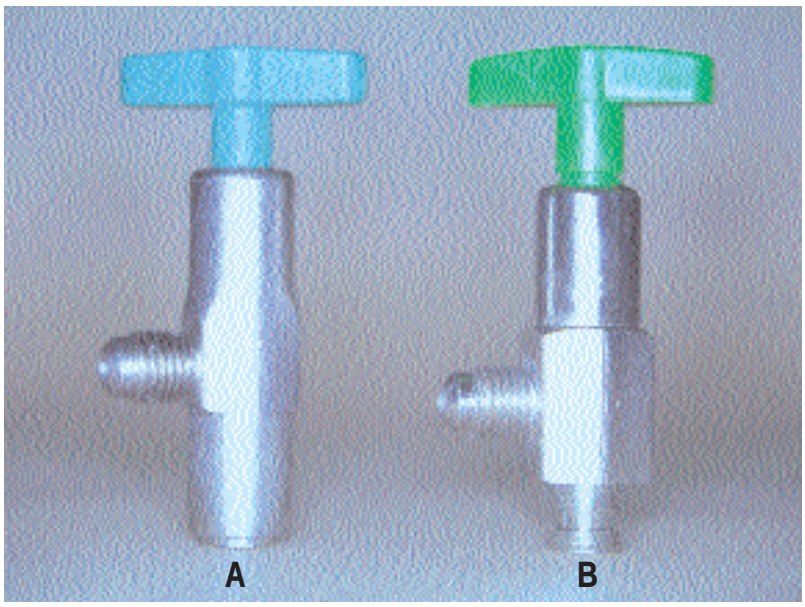
Another method by which smugglers move illegal material into Pakistan is by misdeclaring the quantity of the import. Pakistan receives bulk isotanks of CFC-12 from Greece, Italy and Spain[8]. EIA has received information that three importers declare the tankers as being partially filled, although they are in fact full, and are so able to increase their import quotas by up to 60 per cent and avoid tax and duty. Pakistan also receives considerable quantities of smuggled CFCs through its land borders with India[9].

South-East Asia

A new form of smuggling recently came to light in Malaysia. Cylinders labelled and packaged as containing HFC-134a were discovered to actually contain CFC-12[10]. According to the labelling the gas originated from a firm in the UK called HRP Refrigerants, although the cardboard packaging was manufactured in Portugal. Although using the false label of HFCs to disguise CFCs is not new, in this case the gas was actually sold as HFC-134a, so the buyers believed they were getting a legal substitute to CFCs. As a 13.6kg cylinder of HFC-134a sells for $90, compared with $40 for CFC-12, the profit motive is clear. In tests on 20 cylinders labelled as HFC-134a, only two actually contained the chemical.

In a more traditional smuggling case the Malaysian authorities seized four containers containing 4600 cylinders of CFC-12 in February 2000. These products were found to be counterfeits manufactured in China. Allied Signal's label and Genetron name were used on these cylinders. These were identified as counterfeit from the valves, manufacturers numbers and minor spelling mistakes on the labels[11].

Elsewhere in South-East Asia smuggling is also on the rise. In the Philippines there have been instances of vehicle air-conditioning systems being converted from HFC-134a back to CFC-12, to take advantage of an illegal trade estimated at 75 per cent of legitimate consumption (of around 2000 tonnes)[12]. Around 80 per cent of CFC-12 imports into Vietnam are illegal[12].



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Above: **Cylinder valves; (A) valve used on Allied Signal product (B) valve used on Chinese-produced counterfeit cylinders**

Left: **False packaging, claiming to be HFC-134a manufactured by HRP Refrigerants. The cylinders actually contained CFC-12**

Much of the illegal material seized in India has transited through Dubai and Singapore

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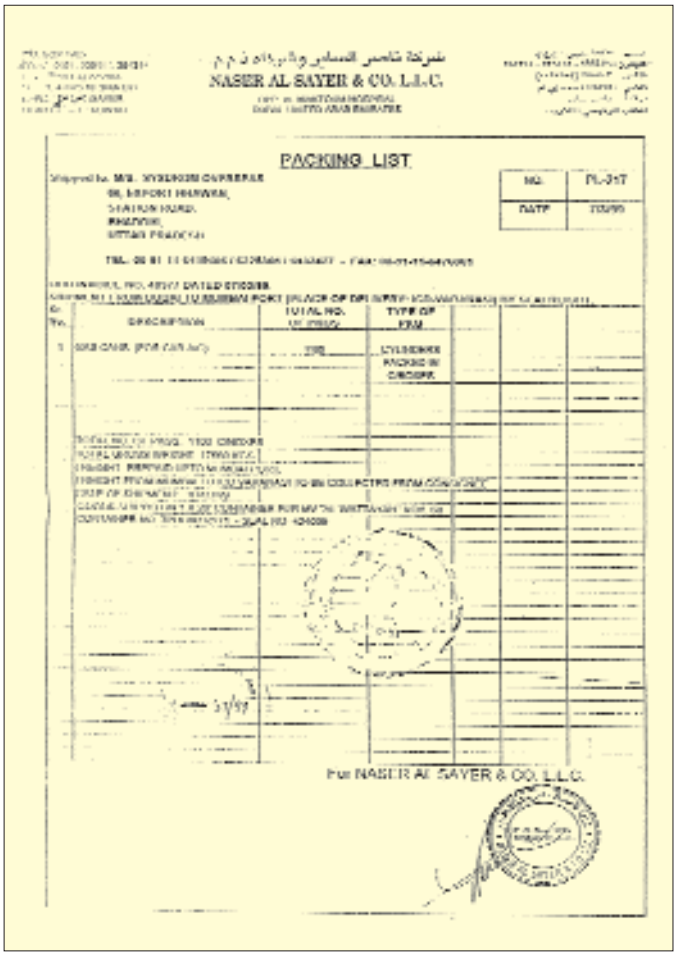
Left: **Kaltech Engineering & Refrigeration Pte Ltd, a Singapore-based firm which exports large quantities of CFCs to Nepal.**

The Role of Transit Countries

A recurring feature in shipments of ODS is the use of transit countries to move the ODS from source to end market which can confuse the trail. Routes uncovered by EIA in the past have revealed ODS moving through three or more countries before reaching the black market of the destination country. Two transit countries that continue to crop up in the illegal trade of ODS are Singapore and Dubai in the United Arab Emirates.

Much of the illegal material seized in India has transited through Dubai and Singapore. More than 60 per cent of the CFCs imported into Dubai are re-exported both legally and illegally to Africa, south Asia and other markets, effectively by-passing Montreal Protocol licensing systems. Industry sources indicate that the Dubai Export Free Zone serves as a conduit for illegal ODS passing into Pakistan and India. One method involves the Transfer of Residence fraud, where migrant workers returning from the Middle East are accompanied by a 40-foot container filled with CFC cylinders. Many people fill the containers themselves and declared these as 'personal effects'. The dealers involved frequently accept only cash and require that the containers are filled and shipped by the customer.

As recognised when investigating smuggling in Europe, a proliferation of brokers is often indicative of illegal trade dealing in ODS. European brokers have recently been relocating to Dubai.


NASER AL SAYER & CO. L.L.C.

PACKING LIST

For NASER AL SAYER & CO. L.L.C.

Left: **Packing list for consignment of CFCs, shipped from Naser Al Sayer & Co, Dubai. This material was seized by customs at Varanasi**

Conclusions

The Montreal Protocol mechanism has made great strides forward in curbing the use of ODS, without which the future for the ozone layer would be far more perilous, yet it has failed to react in a coherent manner to the problem of enforcement and the continued threat of illegal trade in ODS. While large scale smuggling activities into the US and EU have largely been curbed, through enhanced enforcement and new legislation respectively, a disturbing rise in smuggling in Article 5 countries is now emerging. Information gathered and investigations that EIA has been carrying-out indicate that this illegal trade is already of a serious magnitude, is growing, and is prevalent in many developing countries throughout the world. This is occurring at a time when the ozone layer is more depleted than ever before, posing threats to ecosystems and human health.

The challenge to curb smuggling in Article 5 countries is not an easy one. Customs and enforcement authorities in developing countries are often under-resourced. Yet inaction will exacerbate the problem. It is in developing countries, where the bulk of ODS production and consumption now occurs that the biggest remaining challenges to the scheduled phase-out of ODS under the Montreal Protocol are found. If smuggling is allowed to flourish, the ability of Article 5 countries to meet their phase-out commitments will be undermined. The only commitment to date has been the 1999 freeze, yet this has already prompted a growth in smuggling. The existence of an active black market in ODS in many Article 5 countries undermines the market for alternatives, and threatens to encourage illicit production. It will make the 50 per cent cut in consumption required by 2005 harder to achieve.

In light of these challenges, innovative solutions to improve enforcement are needed. Since the late 1990s, increasing attention has been focused on the issue of improving the enforcement of Multilateral Environmental Agreements (MEAs). Discussions have been held by a range of relevant bodies, notably UNEP, the World Customs Organisation (WCO), Interpol and the G8 Group of nations, to enhance co-operation between different MEAs. The issue of enforcement is also central to the United Nations on-going review of international environmental governance during the run-up to the World Summit on Sustainable Development, scheduled for late 2002.

In this respect, it is evident that the Montreal Protocol is lagging behind MEAs such as the Convention on International Trade in Endangered Species (CITES), which contains a specialised Enforcement Assistance Unit, containing personnel with frontline enforcement experience.

At a UNEP Workshop on 'Enforcement of and Compliance with MEAs', held in Geneva in July 1999, the Ozone Secretariat of the Montreal Protocol was urged to take measures to address the illegal trade in ODS. Specific recommendations from the workshop included the reporting of seizure and illegal traffic information to the Secretariat, the signing of formal Memorandums of Understanding (MoU) with Interpol and the WCO, and the appointment by the Secretariat of an international liaison officer from the enforcement community. Two years later and these recommendations have not been acted on.

Greater effort is also needed to train enforcement officers in developing countries and to encourage cross-border cooperation in regions where smuggling has become entrenched, such as India, Nepal and Bangladesh.

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Left: **All developing countries must phase out the use of CFCs by 2010**

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

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Recommendations

Address illegal trade

- Follow the lead and recommendations of other Multilateral Environmental Agreements regarding enforcement
- Create an Illegal Trade Prevention Task Force within the Montreal Protocol
- Appoint a full-time enforcement officer at the Ozone Secretariat

Facilitate pro-active cooperation

- To curb illegal trade it is essential that training initiatives, which encourage sharing of information on illegal ODS trade, are continued and enhanced. Intelligence is important, especially from contacts in industry who are in a good position to notice unusual sales or purchases of ODS.
- Customs training workshops such as the UNEP-organised 'control and monitoring of ODS consumption workshops' are considered a very important element in achieving this goal.
- The Executive Committee and Multilateral Fund of the Montreal Protocol should consider giving greater financial support to such regional training initiatives and, where appropriate, public information campaigns.

Ratify Amendments and enhance and enforce national regulations

- Parties are urged to ratify the Amendments to the Montreal Protocol. 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. The latest report of the Ozone Secretariat reveals that, as of August 29, 2001, the Montreal Amendment has only been ratified by 63 parties.
- By incorporating an export licensing system in their country's legislation, as well as developing, enhancing and implementing national regulations, Parties would facilitate the detection and control of illegal ODS trade. It is vital that national licensing systems incorporate exports of ODS to prevent countries being used as transit points.

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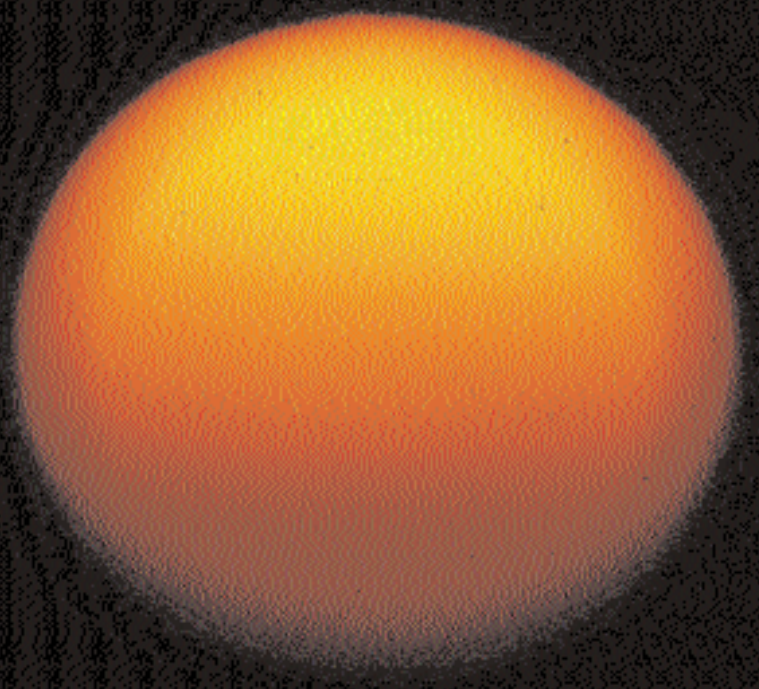

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