century". If the current trend of

continues, within next twenty

years time, the death toll from

tobacco is estimated to rise

from 3.5 million to 10 million,

seventy per cent of which would

be from developing countries

and half of these victims would

be middle-aged. Dr. Bruntland

identified global tobacco con-

trol as a key public health issue.

international attention and ac-

tion in tobacco control. It seeks

international consensus on

global sharing of responsibili-

has twin basic goals - anchor-

ing tobacco control initiatives

as a major public health con-

cern at both national and in-

ternational political agenda

and reducing tobacco con-

sumption world-wide. These

goals are slated to be achieved

by creating awareness against

tobacco, initiating appropriate

action at both national and in-

ternational levels, arranging

for financial assistance for re-

search and training in tobacco

control and forging alliance

with key partners. NGOs and

Media are expected to play per-

haps the most vital role in

transmitting TFI's message

forward to the people as a

whole and the target groups in

particular. Currently, WHO is

preparing to develop an Inter-

ties in tobacco control efforts. It

The aim of TFI is to focus

tobacco

consumption

Tobacco-Free Initiative:Bangladesh Perspective

by Dr. Khalilur Rahman

Increasing tax on tobacco may not be effective in reducing tobacco use. It can only help the government in

generating some small amount of additional revenue. The habituated smokers will buy cigarettes even

with the very negligible amount of money that they are supposed to spend for their minimum food.

It will kill them in two ways from undernutrition and from ill effects of tobacco. Motivation is needed

to help them give up this killer habit.

THE much talked about Tonational Framework Convenbacco-Free Initiative (TFI) tion (IFC) on Tobacco Control. This could be done by activating **I** of WHO came to the fore with the announcement of Dr. Article 19 of WHO's Constitu-Gro Harlem Bruntland at the tion that gives the Organisation 51st World Health Assembly a mandate to negotiate an international convention. Alafter her election as the Director-General of WHO in liance would be formed by WHO, May 1998. Along with Roll UNICEF, World Bank, Govern-Back Malaria, she announced ment Agencies, NGOs, Media, Academia and Research Insti-TFI as her immediate priority programme. Accordingly, in a re-structured WHO set-up TFI Bangladesh Scenario was included as a Cabinet in Tobacco Project immediately after her Again in Dr. Bruntland's assumption of office on 21 July 1998. In Dr. Bruntland's words, "tobacco would be the single largest killer in the next

words, "smoking is a communicable disease. The allure of smoking is communicated through advertising and peer pressure". Smoking is one of the major health hazards in our country that lead to many serious conditions affecting health status of individual, families and the community. It is directly related to numerous diseases and is the prime cause of many deaths. In our country, smoking is also linked with other health and social problems like addiction, drug abuse and anti-social activities. The victims of these phenomena are the youths. We need to save our future generations from this invisible "killer". According to available statistics, at present, the incidence of smoking is mose in the poorer section of the population in Bangladesh. It is also reportedly spreading among the youths and women. More than 57 per cent of the smokers in Bangladesh are aged between 21 and 40. With the speculated flourishing of the tobacco industry in the country, the poor, younger generation and women are likely to suffer the most.

At a time, when WHO has

launched its massive campaign

against tobacco through its TFI

and when our political leader-ship has called for intensified

anti-smoking campaign by un-

dertaking some concrete steps

like declaring smoke-free

zones, imposition of tax on to-

bacco, inclusion of antismoking essays in the text books, insertion of health warnings on cigarette packets and banning advertisement for tobacco and smoking in government mass media including radio and television, reducing tobacco cultivation by crop diversification programmes etc., the October 1998 issue of Tobacco Reporter, an International Journal carried a writeup wherein it is stated that the future of the tobacco industry in Bangladesh looked bright. According to this journal, the smoking population in Bangladesh is around 20 per cent and 22 billion cigarettes are smoked annually in the country. It goes to say that the cigarette market in the country is growing at 6.4 per cent annu-

ally. It further informs that

some multinational cigarette

companies are now negotiating

with some local companies to

produce their brands in

Bangladesh under joint venture

programmes. At the end, the

journal expressed the hope that

with new joint ventures in to-

bacco industry on the way

there would be introduction of

new brands of cigarettes in

Bangladesh market soon. For the Government and the Board of Investment any foreign investment in whatsoever form seems to be a good one. But we need to know that multinational tobacco companies are now aiming at markets of developing countries because of the fact that their market in the developed countries is getting shrinked with the increased

ban on smoking in those countries. We also need to measure the economic benefit of investment in tobacco industry. According to some presumption. the revenue and employment that can be generated by increased investment in the tobacco industry, is less than the amount Government has to pay for the treatment of the people ailing by tobacco consumption. We need to carefully judge the overall economic and social benefit of any investment,

Measures to be Taken

The basic purpose of our anti-tobacco campaign should be to make a generation of tobacco-free children and adolescents. In order to achieve this goal we need to advance in a systematic and panned way. What we need first is perhaps a National Tobacco Policy. While undertaking the exercise to formulate such a policy, government should consult with media, private sector, tobacco industry. NGOs involved in anti-smoking campaign, civil society and other interested parties. We need to accommodate everybody's legitimate concerns in this policy so that it could be acceptable to all and can be fully implemented with the concerted efforts of all parties involved in it. This policy should take due account of the fact on possible economic loss of thousands of people involved in tobacco cultivation and of concerns of those who are dependent on tobacco industry. Before undertaking necessary exercise for such a policy,

awareness creating programmes against tobacco should be launched. Government, in collaboration with the WHO Country Office in Dhaka may organise workshop/seminar on tobacco control. Policy-makers in the Government, parliamentarians, academia, NGOs, experts, private sector, representative of the media and tobacco industry and other interested parties should be invited to this type of workshop/seminar in order for achieving a minimum consensus on this issue. Possibility may also be explored to arrange funds to organise this type of workshop/seminar from the

Central TFI Project. Media, as we all know, can play perhaps the most important role in anti-smoking cam paign. There is a need for collaboration between government policy makers, health workers and media representatives in anti-tobacco drive. Wide dissemination of information on ill effects of tobacco through media could be of immense help and useful in creating awareness against tobacco. Media can also play role in developing educational and legislative measures against to-

NGOs are also playing catalytic and complimentary role in anti-smoking campaign in Bangladesh. The anti-tobacco programmes of the NGOs can be effective for the rural illiterate smoker since they can easily reach out this target group. Government needs to encourage

Alike other fields, some

and assist these NGOs and closely work with them in its efforts for reduction of tobacco use in the country. NGOs may also explore the possibility of getting financial and technical support from WHO Country Office and Central TFI Project since they have been identified as one of the key partners of TFI. Students, social and welfare organisations can also play important role in anti-tobacco campaign. Government can also use these organisations in its anti-tobacco cam-

Agriculture in tobacco is an aspect that needs attention. As rightly said by the Hon'ble President on the "World No Tobacco Day" on 31 May this year, "it would be wise to prefer phase-wise pragmatic steps rather than closing the tobacco industry at a time to avert any economic disaster as thousands of people are involved in the industry". For phase-wise reduction in tobacco cultivation, we need planned crop diversification programmes. Reduction in tobacco cultivation will automatically discourage investment in tobacco industry and expansion of tobacco market in the country. Concrete steps should be taken for crop diversification programmes to lessen dependency on tobacco cultivation and to switch over to other cash crops. FAO and World Bank Representations in Dhaka should be approached for adequate support for crop

diversification programmes. Government has already declared a few places as smoke-

free zones including President's Secretariat, Prime Minister's Office and health institutions Other government offices should also be brought under this smoke-free zone programme. Smoke-free zone programme in health institutions should be strictly implemented The smoker doctors and other health personnel need antismoking orientation. They are the people who can easily motivate patients, specially the poor ones, in giving up smok-

Presently our domestic flights are smoke-free. This also needs to be extended to our international flights. This may be helpful in Biman's ongoing efforts for forging a partnership with other international air lines since most of the international airlines are now smoke

Until to-day the religious leaders and Imams of mosques wield considerable influence over our rural illiterate population. As per latest statistics. smoking is now on the rise in rural areas and spreading rapidly among the poor. Perhaps these religious leaders and Imams, as suggested by many NGO leaders in Bangladesh, can be useful in persuading the rural smokers in giving up this dangerous habit. A National Convention of religious leaders and Imams can be convened and they could be briefed about the useful and perhaps the historic role they could play in motivating the smoker rural population to give up the habit of smoking. Financial support for organising this type of convention can also be available from WHO Country Office and Central TFI Project. A legislation can also be enacted fixing minimum age for smoking and prohibiting sale of cigarettes to the persons under that age. Increasing tax on tobacco may not be effective in reducing tobacco

use. It can only help the government in generating some small amount of additional revenue. The habituated smokers will buy cigarettes even with the very negligible amount of money that they are supposed to spend for their minimum food It will kill them in two ways from undernutrition and from ill effects of tobacco. Motivation is needed to help them give up this killer habit

Bangladesh, WHO and TFI

In the January'99 Session of the Executive Board of WHO, Dr. Bruntland is expected to present a report on the progress on TFI and to seek guidance of the Board on the issue of recommendation about the IFC. In the 52nd Session of the World Health Assembly (WHA) to be held in May 1999, debate would be held to take a decision on the IFC process. It may be mentioned that Bangladesh is currently Member of the WHO Ex-

ecutive Board. Next year's Regional Committee Meeting of WHO South-East Asia countries will be held in Bangladesh in the first half of September 1998. The Director-General of WHO, Dr. Bruntland, may attend that meeting as a special guest. Her visit to Bangladesh could be very useful in getting renewed and increased WHO support to our health sector reforms and for other health projects and programmes. TFI is one of the two immediate priorities of Dr. Bruntland along with the Rollback Malaria programme. Some concrete programmes should be worked out by the Government in the areas of tobacco control and malaria elimination before her visit. She may pledge WHO's enhanced assistance to these programmes during her visit

The writer is Counsellor in the Bangladesh Permanent Mission, Geneva

Biodegradable Polythene (Plastics) from Plants

by Abdul Ahad and S K Zahan

Industrial biotechnology is going to reach beyond novelty products for environmentalists, though, most experts agree that it will have to be part of an interdisciplinary approach. . . its really the integration of the biotechnology and traditional chemical engineering that will make this practical.

HILE genetically engineered or genetically modified food crops have prompted considerable controversy from environmental activists (i.e. Greenpeace) and consumer groups, new advances in enzyme engineering. along with a trend toward interdisciplinary projects in which molecular biologists team up with synthetic chemists, are trying to move environmental biotechnology for the public interest. Polythene is one of most important and discussible invents in modern science. It's widely used whole over the world due to different positive sides-easy to handle, most cases free of charge and after use one can through it very easy way. But then, why all over the earth peoples are awareness for environmental pollution, blocks drains and outlets of water and health hazards caused by poly-

Although the western countries are reusing this polythene through special cycling method and to use for non food stuff

purpose only. In this context I would like propose here one of the few vehicles t!! o overcome this problem as well as to use polythene which is recyclable. environmental friendly and will not be health hazards also. No dought it will be the contribution of molecular biologists therefore quite expensive to set up in industrial level. But its clear we can't get it free of charge in the beginning, may be in near future it will be quite available. May be, near future our nation can overcome this problem to use modified jute made bags-a good substitute of polythene, which only media could emphasised.

The scientific idea is to use a particular bacteria which has already known to produce polyester called polyhydroxyalkanoate (PHA) easily can be processed into a biodegradable plastic. Unfortunately, the cost of fermenting glucose to produce PHA has restricted its ability to compete with traditional polymers. To get around this problem, researchers (at Monsanto)

are moving the production line back a step by inserting the genes for PHA synthesis into plants. Then plants can easily produce and they have a way to doing things that makes use of some resources that we've not able to exploit, like solar energy and carbon from the atmosphere, rather than fossil fuel. Currently the scientists from the same company are focusing on producing the polymer in a tissue specific manner in plants, so that corn stalks or sugarcane leaves, which are normally left in the field to rot, could instead become valuable agriculture products.

While Monsanto is one of the large life science company entering the plastic business. they may find themselves competing with a giant plastics company now entering biotechnology. Also at DuPont company scientists have developed a bacterial fermentation process to produce precursors of a type of polyester from plant carbohydrates. The resulting plastic is completely recyclable and friendly to environment.

They also developing a broad range of chemical and biotechnological approaches to use biological row materials for poly-If industrial biotechnology

is going to reach beyond novelty products for environmentalists, though, most experts agree that it will have to be part of an interdisciplinary approach. We think its really the integration of the biotechnology and traditional chemical engineering that will make this practical. A genetically engineered plant or a fermentation might be used to produce intermediates for traditional polymer synthesis, for example, allowing companies to eliminate costly low-yield steps without retooling an entire manufacturing process. Such considerations are quite crucial in industrial biotechnology, where the ultimate success of an approach is usually determined more in the marketplace than in the laboratory.

The writers are pursuing higher research at the Freiburg University, Germany.

Search for AIDS Vaccine Continues

Judith Perera writes from London

Scientists do not know which kind of vaccine they should develop — one that produces antibodies that destroy free viruses roaming in the blood — or one that creates white blood cells (cytotoxic lymphocytes) that target and destroy already-infected cells.

TITH the number of HIV-Winfected people continu-ing to increase throughout the world, the search is intensifying to develop a vaccine against AIDS.

It is seen as particularly important for the developing world, where recent advances in the treatment of HIV/AIDS will have little impact. The high cost of developing and producing new drugs and the lack of available funds for health care in many countries make it unlikely that new therapies will be widely available in the developing world.

"AIDS is a global epidemic, which is especially acute in the developing countries in Africa and Asia," says Dr Prem Sarin, who is responsible for developing a vaccine as scientific head of the Vienna-based company. CEL-SCI.

"By the year 2000, there will be approximately 40 million HIV-infected people world-wide. Without a vaccine there will be no end to this epidemic and whole generations of young adults will be wiped out."

Vaccine development for AIDS is fraught with difficulties both political and scientific. The identification of the HIV virus in 1984 raised hopes of finding a vaccine, but after 14 years none have come near development, because the main focus has been on finding a treatment for the already in-

fected. Last year, US President Bill Clinton gave a boost to vaccine researchers by setting a target to identify a vaccine within 10 years and, since then, efforts have been stepped up. The scientific challenges, however, remain huge. HIV is unlike any other virus. Unusually, while people usually produce strong immune responses to the HIV virus they still become ill. adding to the mystery as to how it 'works'.

Scientists do not know which kind of vaccine they should develop — one that produces antibodies that destroy free viruses roaming in the blood — or one that creates white blood cells (cytotoxic lymphocytes) that target and destroy already-infected cells.

A combined approach is possible, by creating a vaccine that stimulates both antibodies and cells. Special study is also being made of less well understood immune responses in the body's mucous membranes in the vagina and rectum, which are ports of entry for sexuallytransmitted HIV, and the gut, where experts think the HIV virus may locate itself soon after infection.

Another problem is the lack of suitable animals for testing vaccines, as no animal immune system reacts to HIV the same way as humans. And the HIV comes in many different subtypes and appears to mutate and change rapidly. Most interest has focused on

so-called 'sub-unit' vaccines, produced by genetic engineering, that targets the glycoprotein coating around the HIV. Two types of sub-unit vaccines have been tested in clinical

The US National Institutes

of Health refused early tests by Chiron Corp and Genentech, Inc. (VaxGen). Controversially the firms are now seeking a test in Thailand.

Another approach involves recombinant vector vaccines. which aim to trigger HIV immunity by introducing into the body HIV genes carried in engineered bacteria. One vaccine under trial, the 'ALVAC' class. involves the canarypox virus, re-engineered to carry HIV virus genetic material. Produced by the French pharmaceutical company Pasteur-Merieux-Connaught (PMC).

So-called 'DNA vaccines' are also a possibility. These involved injecting selected HIV genes directly into the body. These enable the individual's own cells to make HIV-based proteins which, in turn, trigger natural immune defences in the human blood stream.

Early tests on animals, allowing for the problems of such studies, show promise. They can also be produced relatively cheaply. Companies working on this approach include Merck, PMC, and Chiron, and smaller biotechnology companies such as Apollon and Auragen. Of these, only Apollon has begun human studies.

So-called 'whole-killed' vaccines are another subject of study. These are produced by neutralising the HIV by using chemicals, heat or irradiation, allowing them to be injected into the body without lethal effect - but also allowing the body to develop an immunity.

A similar but more controversial technique involves socalled 'live-attenuated' vaccines using live but weakened viruses — has been considered, but the risk of infecting the uninfected with the vaccine itself is high.

Virus-like particle vaccines (also known as VIPs) are also being researched. They consist of non-infectious HIV 'lookalike' particles that contain one or more, but not all, HIV proteins - but once again triggering a normal immunity in humans. Similarly there are the 'synthetic peptide vaccines' artificial synthesised pieces of HIV proteins similar to the proteins that coat the HIV.

Many researchers, however, accept that none of the present vaccine candidates are good enough. Nobel laureate Dr David Baltimore, who chairs the US National Institutes of Health's new AIDS vaccine Research Committee, doubts that any are worth large-scale tests. He advocates more basic research and small trials which will also attract drug and biotech companies.

"We need to face industry with real opportunities. Right now the pipeline isn't exciting enough - we're testing concepts that are clearly outdated. Drug companies have made the reasonable judgement that the

time isn't right. Not so CEL-SCI, which is developing a different type of synthetic peptide vaccine. "My main reason for taking up this task at CEL-SCI was the opportunity to move the research and development of a vaccine at a much faster rate than is possible at academic or government institutions," says Sarin.

CEL-SCI's vaccine, now on the second level of three-tier safety trails, is based on peptides found not on the surface of the virus but in the core. These are fairly similar whatever the virus sub-type.

"Our vaccine is designed to work against major HIV subtypes (A, B, C, D, & E) found in Africa, Asia, North and South America and Europe. In contrast, the envelope-based vaccines being tested are based on the B sub-type prevalent in North America and Europe and hence, may not be very useful in the developing countries, Sarin explains.

He adds optimistically: "We believe the prospects are good. We are excited to be developing a vaccine that may save millions of people world-wide, who are at risk of becoming HIV-infected."

- IPS/APB

China Tipped as Chief Culprit for Ozone Erosion

With governments met to discuss progress on the international effort to phase out chemicals that damage the ozone layer, Gemini News

Service reports on new information pointing the finger at those who sustain the under-thecounter trade in these dangerous substances. Neena Bhandari writes from London

TIGH in the stratosphere. between 12km and 27km ▲ Labove ground level, lies the Earth's sunblock: a layer of ozone which prevents ultraviolet radiation from reaching the Earth's surface.

That layer has been steadily eroded over the last few decades by chemicals commonly used in a wide range of manufacturing processes and products, putting humans at risk of higher incidences of skin cancer, immunodeficiency and eye cataracts. This September, the hole

was bigger than it has ever been: a 27 million square kilometre gap, three times the size of Australia, over the southern hemisphere.

The US National Aeronautical and Space Administration (NASA) believes a severe Arctic ozone hole will also develop. tripling levels of UV radiation hitting northern hemisphere countries. And according to a new report published by the Environmental Investigation Agency, much of the blame can be laid at China's door.

The report, entitled "A Crime Against Nature: the worldwide illegal trade in ozone depleting substances (ODS)", identified more than 20 companies in Hangzhou, Zhejiang, Tianjin and Dalian port in northern China producing ODS which permeated the markets of the US, France, Belgium, Holland, Italy, Greece and Spain.

Many of them like the Ningbo Material General Corporation advertised on the Internet and claimed to have shipped 100 tonnes of chlorofluorocarbons (CFCs), one of the key ODS, annually to an Italian customer since 1995.

CFCs are the most wellknown ODS, given their extensive use in refrigeration equipment, air conditioners and aerosol sprays.

Others - hydrochloroflorocarbons (HCFCs) and halons, the latter widely used in military, aerospace, shipping and

the oil and gas industries — are also responsible for ozone depletion.

The damage they do to the ozone layer has been known since 1974, when Sherwood Rowland and Mario Molina, scientists at the University of California at Davis, published findings that CFCs can remain in the atmosphere and release large quantities of chlorine when broken down by the sun. This in turn breaks down highlevel ozone protecting the earth from UV radiation.

By the '80s, governments and inter-governmental and nongovernmental organisations drew up a world plan resulting in the 1985 Vienna Convention for the protection of the ozone

The Protocol to the convention was adopted in 1987 in Montreal, coming into force in January 1989 and aimed at controlling the production and consumption of ozone-depleting substances. The parties to . the Protocol are meeting in Cairo to discuss what action needs to be taken to restrict the release of CFCs and halons and bring new ODS under the regime.

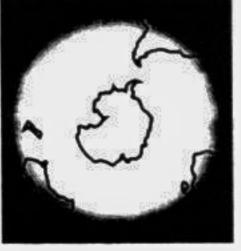
"International regulations permit trade in recycled CFCs and halons," explained EIA Campaigns Director Steve Trent, "but this clause is used as a cover to trade virgin [newly manufactured] chemicals."

This is where China — which has not signed the Montreal Protocol — is at fault, according to the report. Its factories sell both virgin and recycled ODS at extremely low prices, exporting CFC12 at between \$1.30 and \$2.40/kg and halon 1301 at between \$7.50 and \$9.50/kg.

According to the EIA, even where exports are labelled as "recycled" the sheer quantities suggest that virgin manufacture is the true source.

The problem in Europe is that a great deal of refrigeration and air-conditioning equipGlobal sunscreen

An inmense hole over the South Pole has appeared in the ozone layer the planet's atmospheric protection against ultraviolet radiation.



In 1989 the Montreal Protocol was established to try to eliminate the chemicals that damage the ozone layer.

At present, the risk of malignant skin cancer in the US is now 1 in 87 an 1,800% rise since the 30s

By 2050 there could be 33,000 new cases a year in the US and 14,000 in NW Europe, even taking into account Montreal. But Canada's government estimates that if Montreal works:

19,1 million non melanoma skin cancers. 1.5 million melanoma skin cancers, and 333,500 skin cancer death can be

avoided by 2060 The most common ozonedepleting chemicals are CFCs used in aerosols, air conditioning, refrigeration and Halon, used in

fire extinguishers

ment across the EU still relies on CFC12. Industry analysts estimate the scale of the illegal trade at between 6,500 and 10,000 tonnes each year.

As for the US, during 1997 over 200 tonnes of Chinese CFC12 entered the US market and this amount has been equalled in just the first six months of 1998. Worse is the halon situation

in North America. Both the

production and sale of halons

are banned in developed coun-A number of firms have invested in the capital intensive task of reclaiming halons. The US is the premier market for reclaimed halon 1301, although a substantial demand remains in Europe. US Bureau of Census statistics show a total import of over 670 tonnes of halons into the US during 1997 from China - the biggest at 235 tonnes -

and Canada. Yet partly thanks to Chinese brokers who have set up shop in the US, says the report, "The in-

Germany, Italy, Norway, UK

flux of cheap material has caused a gross distortion in the North American halon market, adversely affecting legitimate recycling operations. For instance the usual market price for reclaimed halon 1301 in North America is over \$20/kg, while the Chinese material can be obtained for \$8.50/kg."

And though even the Chinese material is certified, for import licence purposes, as reclaimed or recycled, halon plants in China are shown in the EIA report to be almost exclusively for manufacture.

The main customers, it says, are the US Department of defense and British Petroleum. As a result, the atmospheric

concentration of halons continues to increase. Used mainly for the fire suppression, they contain bromine, which does 40-60 times more damage to ozone than the chlorine found in CFCs.

"China, which can continue to produce halon until 2010. more than doubled its production of halons between 1992-94

and was responsible for 90 per cent of the world's halon output in the latter year," the report explains. It has to be remembered, though, that China is supplying a market in the developed world

that, in theory, is no longer interested in ozone depleting substances. Although the EIA's report lays much of the blame for the illegal trade on China, it recognises that the developed world signatories are still the bulk consumers of illicit ozone depleting substances. It is possible that this factor is what stands in the way of effective monitoring and enforcement.

In other words, the onus is on the developed world. And as with all things environmental, time is running out. — Gemini News

The writer has worked on several Indian newspapers, including The Times of India, Hindustan Times and The Pio-

