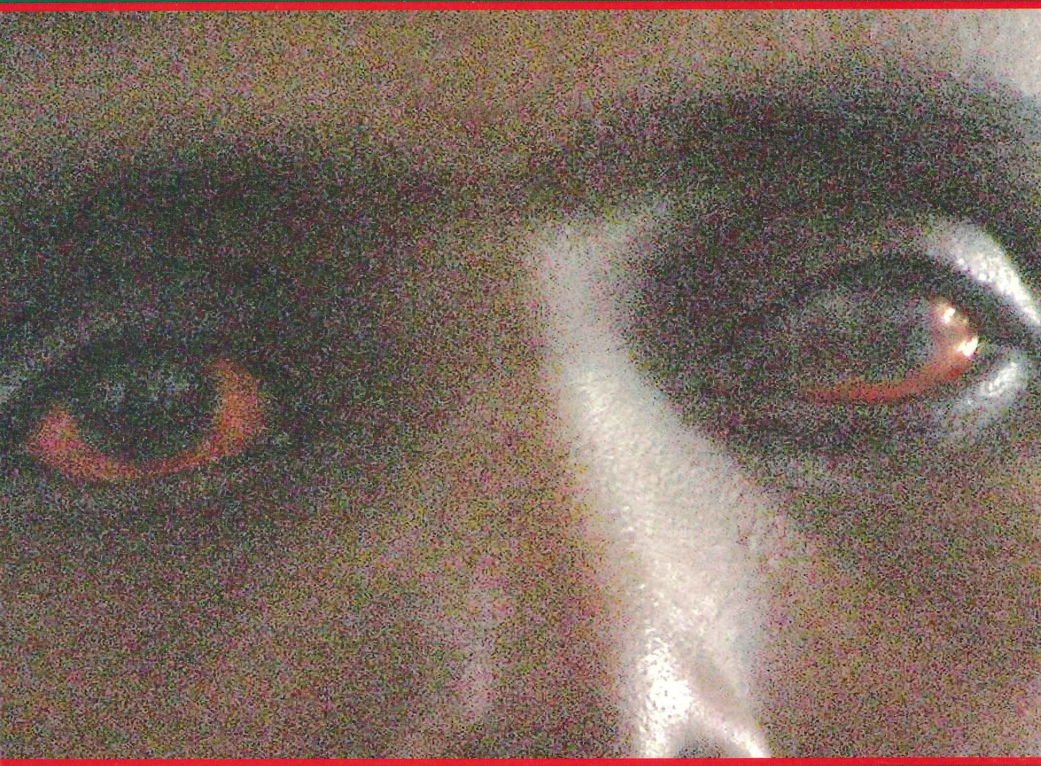
THE POLITICS OF PARAQUAT



JOSIE M. FERNANDEZ
and RASH BEHARI BHATTACHARJEE

THE POLITICS OF PARAQUAT

Josie M. Fernandez and
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Tenaganita/Pesticide Action Network Asia and the Pacific

2006

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Printed by:
Syarikat Asas Jaya
No. 3-2A, Jalan 11A/133
Sri Sentosa, Jalan Kelang Lama
58000 Kuala Lumpur
Malaysia

Cover design and layout: Aliff Azzad

ISBN: 983-40375-5-4

"The world is a dangerous place to live; not because of the people who are evil, but because of the people who don't do anything about it."

- Albert Einstein

Dedicated to all the victims of paraquat with the conviction that a poison-free world is on the horizon

Tenaganita

TENAGANITA is a women and migrant workers organisation with the mission to promote and protect the rights of all women and migrant workers within a globalised world. Born out of the struggles of women and migrant workers in Malaysia in 1991, the organisation has grown from strength to strength, challenged with trials, growing response from the communities with increased expectation to deliver.

We believe that in order to achieve our full potential as a human person, there should be an enabling, safe and healthy environment for all people irrespective of gender, race, color, origin, identity or religion.

Today, Tenaganita has eight major programmes to empower, organise and consolidate migrant and women workers not only in Malaysia but regionally. The organisation has gained recognition of its work and is in fact seen as the organisation for information and interventions on migration.

Pesticide Action Network Asia and the Pacific (PAN AP)

PESTICIDE Action Network Asia and the Pacific (PAN AP) is one of five regional centres of PAN, a global network working to eliminate the human and environmental harm caused by pesticides, and to promote biodiversity-based ecological agriculture.

"Our vision is a society that is truly democratic, equal, just, culturally diverse, and based on food sovereignty, gender justice and environmental sustainability". Thus PAN AP asserts people's food sovereignty based on the right to food for all, founded on the right to land and productive resources and the right of communities to decide on our own food and agriculture policies. We are committed to protect the safety and health of people and the environment from pesticide use, and genetic engineering in food and agriculture. We strive to protect and promote the rights, equality and dignity of women. We will promote and protect biodiversity based ecological agriculture. Our goal is to strengthen people's movements to eliminate hunger and achieve food sovereignty. We endeavour to achieve these goals by empowering people within effective networks at the Asia and the Pacific, and global levels.

Based in Penang, Malaysia, Pesticide Action Network Asia and the Pacific is linked to more than 150 groups in 18 countries in the Asia Pacific region.

About the Authors

Josie M. Fernandez has been at the forefront of citizen's advocacy since the 1980's, leading national and regional consumer organisations. She was the founder president of the Education and Research Association for Consumers, Malaysia, Regional Director of the Consumers International Asia Pacific office and was a former Deputy Secretary-General of the Federation of Malaysian Consumers Associations (FOMCA). As an advocate of the rights of consumers, women, children and workers and as an environmental activist, Josie has lobbied, written and spoken widely on these issues locally and internationally. She was an active participant of international networks like the Health Action International, Pesticide Action Network and numerous environmental, human rights and women's networks. As a researcher and writer, she has authored and edited some 20 publications and many papers. Josie has served as a consultant to the Ministry of Domestic Trade and Consumer Affairs, Malaysia. The Malaysian government conferred Josie the National Consumer Award in 1994. She is a recipient of the 2007 Asian Public Intellectual Fellowship of the Nippon Foundation, Japan. She is a founder director of the Centre for the Advancement of Philanthropy and a board member of Transparency International – Malaysia and a consultant to FOMCA.

Rash Behari Bhattacharjee is a journalist with an interest in environment, development and human rights issues. He has been in the mass media for over two decades, and is currently an Associate Editor at theSun, Malaysia's first free national daily, where he is responsible for the paper's opinion and editorial pages. He is a founder-director of the Malaysian Centre for Environmental Communicators, a non-profit organisation dedicated to enhancing the profile of environmental journalism, and is currently its Hon. Secretary. He has also spent time at the International Organization of Consumers Unions (now renamed Consumers International) and the Consumers Association of Penang previously.

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Acknowledgments

We would like to express our deep gratitude to Tenaganita and the Pesticide Action Network Asia and the Pacific (PANAP) for making possible this important record of the plantation workers' struggle for their right to a safe working environment and the recognition of their dignity as human beings. In addition, a great number of people have helped us with their ideas, advice, support and encouragement. To them, our heartfelt thanks. It is impossible to name all of them in the space available, but the following deserve special mention:

Irene Fernandez, Sarojeni Rengam, Jennifer Mourin, Maneyvannan Velue, Arjunan Ramasamy, Nagama Raman, Mardiah Abdullah, A. Navamukundan,

Berne Declaration for information and documents.

The staff of Tenaganita and Pesticide Action Network Asia Pacific, Kogila Vani, Camverra Jose and Shashi for research and editorial support.

Our families for their love, kindness and support.

We thank all those who gave their suggestions and criticisms. However, we bear sole responsibility for what is in the book.

Josie M. Fernandez
Rash Behari Bhattacharjee
November 5 2006

ABBREVIATIONS

AOTD	–	The Advanced Oleochemical Technology Division
BD	–	Berne Declaration
CAP	–	Consumers Association of Penang
CCPO	–	Cabinet Committee on Palm Oil Competitiveness
CIAM	–	Central Indian Association of Malaysia
CSR	–	Corporate Social Responsibility
EAC	–	East Asiatic Company
EC	–	European Commission
EPA	–	Environmental Protection Act
ERA Consumer	–	Education and Research Association for Consumers Malaysia
EU	–	European Union
FAO	–	Food and Agriculture Organization
FELDA	–	Federal Land Development Authority
FELCRA	–	Federal Land Consolidation and Rehabilitation Authority
ILO	–	International Labour Organization
IOCU	–	International Organization of Consumers Unions
LD_{50}	–	Lethal Dosis
LITS	–	Low Intensity Tapping System
MAPA	–	Malaysian Agriculture Producers Association
MCPA	–	Malaysian Crop Care and Public Health Association
MDGs	–	Millenium Development Goals
MIC	–	Malaysian Indian Congress
MNCs	–	Multinational Companies
MOH	–	Ministry of Health

MPOA	–	Malaysian Palm Oil Association
MPOB	–	Malaysian Palm Oil Board
NAP	–	National Agriculture Policy
NEP	–	New Economic Policy
NGO	–	Non-Governmental Organisation
NIOSH	–	National Institute of Health and Safety
NUPW	–	National Union of Plantation Workers
OPP	–	Outline Perspective Plan
OPS	–	Organizacion Panamericana de la Salud
OSHA	–	Occupational Safety and Health Act
PAN AP	–	Pesticide Action Network Asia Pacific
PIC	–	Prior Informed Consent
PMFTU	–	Pan Malayan Federation of Trade Unions
PNB	–	Permodalan Nasional Berhad
POIC	–	Palm Oil Industrial Cluster
POPs	–	Treaty on Persistent Organic Pollutants
PRC	–	People's Republic of China
R&D	–	Research and Development
SAM	–	Sahabat Alam Malaysia (Friends of the Earth Malaysia)
SOCSO	–	Social Security Organization (Malaysia)
UNDP	–	United Nations Development Programme
UP	–	United Plantations
UPAM	–	United Planting Association of Malaya
USD1	=	Ringgit Malaysia(RM3.70)
VMO	–	Visiting Medical Officer
WHO	–	World Health Organization
WTO	–	World Trade Organization

(Insert Picture – Picture 10 Woman_Spraying_ No_Protecion_Indonesia_ May_04.jpg)

Pesticide sprayer in Medan, Indonesia spraying paraquat without protective equipment.

PRESS RELEASE OF THE BERNE DECLARATION

Zurich, November 6, 2006

Stop Paraquat: Citizens around the World condemn Syngenta

The campaign to stop the Syngenta pesticide paraquat is gathering support around the world. The International Union of Agricultural Workers' Associations (IUF), the 2005 Alternative Nobel Prize Laureate Irene Fernandez of Malaysia, and a representative of the Swedish Chemicals Inspectorate said at a press conference in Switzerland that paraquat no longer has a place in agriculture because the highly toxic product of the Swiss agrochemical corporation had claimed too many victims already. Seeking to increase the pressure on Syngenta the Berne Declaration (BD) has called a "public proceeding".

In German-speaking countries the public proceeding in the paraquat case started in early October. So far, some 16,000 people have condemned Syngenta's paraquat policies on **www.stop-paraquat.net.** By marketing paraquat primarily to countries where it is not used according to instructions, Syngenta is acting with gross negligence and is complicit in ten thousands of poisonings every year" says BD-expert François Meienberg.

Sue Langley, coordinator of the International Union of Agricultural Workers' Associations (IUF) representing over

2.5 million people in 125 countries, explains why her members overwhelmingly oppose paraquat: "On banana plantations in Central America, palm oil plantations in South East Asia, and in many African countries workers suffer from the effects of paraquat on their health. The product must be banned worldwide."

Irene Fernandez, Right Livelihood Award Winner and Chairperson of the Pesticide Action Network Asia & the Pacific, has been fighting the use of paraquat in her home country for many years. A ban proclaimed by the Malaysian government in 2002 was never implemented – for various reasons, including an intervention by Syngenta. "Syngenta must be held accountable, at last, for the health damage caused by paraquat", Fernandez insists.

Sweden outlawed paraquat back in 1983 and in 2004 filed an appeal to the European Court against a decision of the European Commission to re-approve paraquat for Europe. "Sweden has the opinion that we have a global responsibility to send clear signals that paraquat is not safe to use - neither in Europe nor in developing countries", said Kirsti Siirala, a representative of the Swedish Chemicals Inspectorate, at the press conference.

Invisible Workers

THIS book aims to awaken the conscience of its readers to the silent poisoning of millions of agricultural workers worldwide who are exposed to the weed killer paraquat every working day of their lives. Much evidence of the harm that it causes has been gathered since this deadly chemical was introduced into agriculture about 60 years ago.

"Paraquat cannot be used safely, particularly not on plantations and small farms, and there is no antidote," states a key report *Paraquat: Syngenta's Controversial Herbicide,* produced by a global coalition working to ban the chemical. "People are dying while others are left seriously ill. The most severe health effects are found in developing countries where workers suffer from damage to lungs, skin, eyes, nose, fingernails and toenails."[1] The documented evidence of all these hazards will be presented as we examine the case against one of the largest selling agrochemicals in the developing world.[2]

In spite of the damage that it causes, the chemical, which is sold in over 150 formulations with names such as Gramoxone and Goldquat is being pushed as a cost-effective solution for weed control. "Non-selective herbicides," says Syngenta, the leading paraquat producer, in its Annual Report for 2005, "improve productivity and help prevent soil erosion by reducing the need for hand weeding and mechanical tillage." More damagingly, the second biggest agri-business concern in the world today consistently repeats the refrain that it is safe when used under the stipulated conditions, knowing fully well that this is impractical in the hot, humid environment under which it is applied throughout much of the Third World. Ironically, paraquat has been banned since 1989 in Switzerland, the home country of Syngenta.

This account confronts the faulty arguments that are presented by parties with a vested interest in the continued sale of paraquat. It reminds the reader of the fundamental values

that should govern any social, economic or political enterprise that considers its actions to be aligned with universal norms of humane behaviour. To balance the economic arguments that have been forwarded by the industry and governments, we take the position that lives must come before profits.

The evidence against paraquat is based on the work of the many conscientious individuals and groups that have documented the dangers associated with the chemical. In the end, after surveying the damage suffered by the victims of this poison, we hope our readers will be moved to act individually and collectively to eliminate the continued use of this toxic substance.

This story begins with the sufferings of agricultural workers in Malaysia, where thousands of pesticide sprayers – including an indeterminate number of migrant workers on tenuous contracts – work on palm oil plantations, smallholdings and farms throughout the country. Citizens groups working with these marginalised people since the 1980s repeatedly found that the health problems they were reporting pointed to their exposure to chemicals used in agriculture.

It is in the plantations that the cases of poisonings have been most frequently encountered, and so this account begins with a history of plantation agriculture, discussing its influence on economies and peoples. Researchers like John Madeley in *Paraquat – Syngenta's Controversial Herbicide* have noted the conditions that allow poisonings to happen: "The people most severely affected by pesticides are agricultural workers on plantations and large estates whose full-time job is to spray pesticides."

The campaigners against paraquat say in a letter to the Malaysian authorities urging for the chemical to remain banned: "Workers on plantations are frequently employed as sprayers for six days a week, ten months a year or more, and therefore have a high degree of exposure to the chemical. The greatest risks to workers of fatal and serious incidents are during mixing and loading of spray equipment, where contact with the chemical concentrate occurs. Fatal accidents

have also been described due to prolonged contact with the diluted paraquat spray during application. Conditions of use in many developing countries make it difficult to follow label instructions and recommendations."[3]

Working in the plantation labour force is not an attractive option in Malaysia for a variety of reasons, including the heavy workload, poor wages, low social status and the competing opportunities created by industrialisation. Throw in the social isolation of plantation life and the disadvantaged position of a powerless class, and you have a potent push factor that has sent first its men and then the women in search of a better life in the cities. Into this pit have fallen droves of migrant labourers – mostly from neighbouring Indonesia, but also from Bangladesh, Nepal and India – seeking to escape the enervating poverty of their home countries. These new victims, who are focused on earning enough to pay off the debts they incurred for their passage to their adopted land, are not even receptive to messages about their job hazards.

To appreciate the complicated nature of the sprayers' problems, we must get closer to the space that these disempowered people occupy; to understand their depressed socio-economic status, their poor bargaining position, the weaknesses in the union representation; the political environment of the plantation community; and the burden of an anachronistic socio-cultural system that condemns women to a position of subordination and abuse. It is a heavy load on the powerless underclass.

But are the quarters that stand accused truly as mercenary and unfeeling as this scenario implies?

Then consider this: How many eyes blinded by pesticides accidentally splashed on sprayers' faces does it take to move a chemical company to put people before profits? How many disfigured hands from which the nails have dropped off because workers, ignorant of the toxic qualities of the chemicals they work with, nonchalantly handle the pesticides with their bare hands every working day? How many bleeding noses? How many complaints of breathing difficulties due to

inhaled pesticide spray?

The litany of horrors goes on. Deaths by accidental ingestion of pesticide occur among sprayers who blow on blocked spray nozzles because they have no clue about the lethality of paraquat. Clinical studies show the potential of paraquat to induce Parkinson's disease, but remain unacknowledged by the chemical industry. Cases of suicide by paraquat are glossed over by plantation companies and the chemical producers as the wanton acts of irresponsible persons, rather than the human tragedy that it is. And all along they continue to assert that less hazardous alternatives to paraquat are not effective.

So workers' lives continue to be sold off to satisfy the agro-industrial goals that are promoted as the economic salvation of Third World countries. Meanwhile, agricultural workers face occupational hazards daily in exchange for a token allowance to compensate for this toxic exposure.

And when the workers bring their health problems, including those caused by their contact with pesticides, to the paramedic who is their first recourse to healthcare, they are routinely prescribed painkillers and a lotion and perhaps given the day off, instead of being directed to competent medical experts. For plantation managements who fret over production targets and cost management rather than occupational hazards faced by sprayers, health problems are a secondary concern. Those seeking genuine medical attention, therefore, risk being censured for malingering. Besides, with their low pay, there will be no food on the table if every ache and pain stops them from their daily toil. As private sector employees, plantation workers do not have access to free public health care. Nor is private health care an affordable option for these wage earners.

Let us leave these workers alone for a moment in their predicament and look beyond them to the agro-chemical industry. Who is producing this poison and how much is being produced? What is Syngenta and what do they have to say about all this? Do they know about the effects their multi-million dollar product is having on so many people?

Syngenta is a creature born from the merger of the agrochemical and seeds businesses of the Swiss company Novartis and the Swedish-British conglomerate AstraZeneca in 2001, in the face of European resistance to genetically modified organisms. Having the lion's share of paraquat sales, it will continue production of this chemical for as long as public opinion permits, promoting it as a package of agricultural inputs designed to address the world's food needs.

Paraquat is a non-selective herbicide that kills only plant parts containing chlorophyll on contact. It became popular because it reduced the need for extensive manual labour for weeding. In the last two decades, growth in pesticide use has been helped along by trade liberalisation, John Madeley argues in his report *Paraquat: Syngenta's Controversial Herbicide.*

Plantation managements in Malaysia have fought very hard to keep a tight lid on production costs that included maintaining a low wage regime that has left workers stuck in an impoverished existence. Even the so-called minimum wage, amounting to all of RM 470 (about USD127) monthly that was accepted by members of the Malaysian Agricultural Producers Association in 2001 was conceded after a long battle, although it is below the official poverty level income. Yet plantation agriculture contributes some RM60 billion annually to the Malaysian economy on the back of this cheap labour.

With such an important stake in Malaysia's growth, accounting for about 5% of the GDP, the plantation sector gets special treatment from the government. In the grand scheme of national development, the revenue generated by plantation agriculture creates a solid barrier through which the workers' distress make a feeble sound. So despite the recommendations of government officials concerned over the unacceptable risks faced by paraquat users, the final decision somehow falls in favour of money instead of lives. Farmers, who are also significant users of paraquat, are similarly put at risk, despite their importance to the food security of the nation.

A long line of citizens groups have taken up the cause of the victims from the 1980s till today, sometimes catching the

public eye, at others working unheralded in the humble homes of the farmers and agricultural workers. The campaign to ban paraquat has caught on in the international citizens movement, which is now engaged in a global battle to end the use of this toxic chemical.

There are laws of course to protect workers from harm at work, but due to the inherent weaknesses of the legislation or the prevailing environment in terms of compliance with the law, their implementation leaves much to be desired. For example, many provisions of the Malaysian Occupational Health and Safety Act 1994 are qualified by the phrase "so far as is practicable" (Sections 15 and 17) creating room for non-compliance where the will is lacking. Further, a major criticism of the Act's administration is that it emphasises industrial accidents rather than occupational hazards. The Pesticides Act 1974 too has numerous requirements on the labelling, registration, importation, manufacture, advertising, sale and storage of pesticides, but the enforcement of these fine clauses is another matter altogether.[4]

When workers are at risk, the first line of defence is their union. However, interaction with plantation workers reveals a feeling of dissatisfaction among them that their union has not given sufficient attention to the occupational hazards to which they are exposed.

Is there hope for a change?

If you work for a paraquat producer, or a plantation company that uses paraquat, or are a government official involved in the promotion of high-input agricultural methods, we would like you to ask your employers, the board of directors, members of parliament or cabinet ministers as the case may be, to explain their decision to allow such a toxic substance to be used. If someone you know is responsible in some way for this tragedy, you could talk to them, and perhaps ask, "How could you?"

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CHAPTER ONE

Introduction

Let us take a moment at the outset to discuss why this book is necessary and important. At the core of the miasma of occupational poisoning in agriculture is the pesticide sprayer, a humble worker who earns his or her keep by applying herbicides, or chemicals which kill weeds, with sales in 2000 reaching approximately USD14 billion, about half the value of the world pesticide market.[1]

This person lies at the bottom of an enormous economic machine that generates billions of dollars in revenue for chemical companies, plantations and governments across the globe. Modern day chemical agriculture revolves around the production of commodities such as palm oil, soy, coffee, bananas, and staples such as rice, maize, etc. It involves

multinational concerns, attracts investors, creates demand for agro-chemicals, generates jobs, opens forests and drives a whole universe of downstream business activities. So, it is a highly profitable and therefore powerful engine driving global trade.

Unfortunately, the chemical that helps to ensure that the productivity of this sector remains high is a deadly poison. Toting a four-gallon backpack, pesticide sprayers risk accidental inhalation of the spray during frequently windy conditions. Backpacks also leak, causing the liquid to course down the workers' backs, soaking their clothes. Skin irritation is among the consequences of such exposure. There are other more deadly effects, including damage to the liver, lungs, kidneys and other organs, which are discussed in some detail hereafter.

This book is an attempt to provide an analysis of the economic, political, social and human factors that shape the lives of agricultural workers who are exposed to the occupational dangers of using paraquat. It seeks to rebut the arguments of the parties that have a vested interest in the continued use of this herbicide and to expose the lack of concern for the dangers that the workers face.

Syngenta and its corporate predecessors use promotional language in company literature and statements that downplay the risks of exposure to paraquat. They have questioned the methodology of studies that warn of potential hazards, and used technicalities to obfuscate the basic issue that paraquat poses unacceptable risks to humans and the environment.

Some government leaders too have remained unresponsive to the most compelling evidence of paraquat's deadly effects on pesticide sprayers' lives. Others, including senior officials of Malaysia's ministry of health, have been very vocal since the 1980s about the terrible costs of paraquat in human terms. All in, it took a two-decade-long battle to convince the authorities that paraquat must go.

Most plantation owners have shown themselves to be unmovable when it comes to substituting paraquat for less

harmful alternatives – tirelessly repeating the refrain about paraquat's cost benefits. They need to acknowledge that it cannot be safely used, especially under tropical conditions.

The plantation workers union, which should be moved by the evidence of paraquat's harm to protect sprayers from its hazards, has not shouldered this responsibility. The government's emphasis on the development of cash crops has left the union unable to take on an economic system that depends on a low wage regime. So it focuses on bread and butter issues, fighting for small wage increments and taking up individual cases of abuse, or joining the promoters of this chemical-based agriculture in the education of workers in the so-called safe use of pesticides, despite its impracticality in the tropics. That will not do. It must awake to its responsibility to the basic right of workers to be free from harm and lend its voice to the growing chorus of opposition worldwide to this toxic chemical.

The public at large must examine its conscience over its unresponsiveness to the plight of these workers who must expose themselves to harm daily to earn a wage. And that too, not a living wage, but a pittance that condemns them to a precarious existence at the fringe of our vision.

And where does the mass media stand in this picture? Can it say that it has discharged its social responsibility to these downtrodden people to a reasonable degree? It is true that some of the evidence that is piled up against the agents of paraquat has been provided by media reports of poisonings and neglect in the plantations, and includes the heated debates over the pros and cons of a ban on the herbicide. But the corporate media quickly tires of the gloomy life stories that are the lot of plantation workers. In the end, however, the media merely reflects the values that are current in our society today, and if change is needed, media audiences must respond to this reality first.

A sense of outrage must also arise among professionals in communities such as the legal and medical fraternities that the services they represent have failed to engage with this

invisible crisis. A responsible, humane society must find such exploitation of human beings too repugnant to bear and must press for a change in the status quo.

To build the case for a ban on paraquat, which the Malaysian government imposed in August 2002 but has now rescinded until 2007, we begin by examining the scope and extent of plantation agriculture in the country and globally. This is the area that is covered in Chapter Two, *Plantation Agriculture, Plantation Lives*. Tracing its early days when then Malaya was a British colony, this account sketches in the economic importance of plantation agriculture to the colonial government, and the management system and practices that were employed in the 19th century. This understanding provides an important basis for an appreciation of the social, cultural and economic characteristics of plantation agriculture till today. On the labour side, it traces the sources of labour as well as the cultural characteristics of the plantation people, their wage structure and the gender dimension at work and at home. Additionally, the advent of new sources of migrant workers, that provide a new pool of "precarious labour" ready for exploitation, is mentioned.

In order to understand the enormous influence of the agri-business industry, Chapter Three, *Paraquat: Profits, Power and Perils* measures the extent of cultivation in oil palm and rubber, the volume of produce traded and the amount of chemical inputs that is generated for this end. The major players are identified, and their share of the sector tabulated. Multinational corporations wield great economic power which they use to influence governments, standard-setting bodies and local communities. Examples of such influence are presented. Increasingly, the biggest growth areas are in Asia and Latin America. Older products, particularly those that do not meet international standards, are being dumped in Asian markets.

The chapter provides compelling evidence of the health effects of paraquat, based on a large number of peer-reviewed studies. Many of the severe health effects due to the inadequate

working conditions, including insufficient protection of workers, are found on a large scale in both developing and developed countries. It is not possible to use sufficient personal protective equipment in hot, humid climates. In such a situation, the burden of responsibility for ensuring that paraquat is used according to the manufacturers' directions cannot be placed primarily on workers. Their employers, the regulators, representatives and the manufacturers clearly owe a duty of care to these workers to ensure that they are not harmed as a result of the work that they have to do. This right is especially relevant because the problems resulting from paraquat exposure are not obscure phenomena, but are found all around the world, from the US to Japan, and from Costa Rica to Malaysia. Attention is drawn to the effects of paraquat on the immune, nervous and reproductive systems. The development of Parkinson's disease has been linked to exposure to paraquat in a Taiwanese study. Other studies have associated paraquat exposure to skin cancer.

The chapter examines the dangers of paraquat to the environment, such as soil and water contamination, harm to many species of aquatic life, birds and mammals. Wider registration of paraquat was rejected in Germany on environmental grounds. The importance of health, safety and environmental regulations on the control of pesticides is discussed in both the national and international contexts.

For readers to understand how the use of paraquat is regulated, and what systems are in place to protect agricultural workers and farmers from exposure to toxic chemicals, openness in government affairs is very important. In the Malaysian context, this is difficult because in place of safeguards guaranteeing fundamental rights including freedom of information and freedom of association, there are numerous laws that stand in the way of access to information and other basic human rights. So, for a citizens group seeking to engage the government on its ban on paraquat, there was no transparency about its decision to permit the re-registration of paraquat products from November 1, 2006. Citizens groups

had to learn about the decision through the media.

With these perspectives as a backdrop, it becomes possible to fathom the enormous challenge involved in pushing for a ban on paraquat, which the World Health Organization described as "the only toxic herbicide of the post-war years". Chapter Four, *Battle Against Paraquat* traces the campaign mounted by social action groups since the 1980s to stop the poisoning of agricultural workers and farmers by this herbicide. A decade later, Tenaganita and the Pesticide Action Network Asia Pacific were to build on this momentum which culminated in a ban on paraquat in 2002, although this gain has now been eroded by a rollback of the ban until 2007.

Chapter Five, *Corporate Social Responsibility: A Reckoning,* examines the claims made by Syngenta in its Corporate Social Responsibility Report 2005. The chapter looks at the use of CSR as a euphemism for marketing and points out some instances of unethical advertisements. It questions whether Syngenta's claims in its CSR Report meet the criteria and principles that have been spelt out in various UN conventions such as the Stockholm Convention, Rio Declaration, the 1995 Copenhagen World Summit on Social Development and Johannesberg Plan of Action. Companies that seek to join the Roundtable on Sustainable Palm Oil have to stop using paraquat as it does not meet the criteria set by the roundtable. We cite examples of socially responsible corporations that reject products cultivated with paraquat as a weed control agent. A legal, economic and social policy framework built on the principles of fundamental human rights to promote corporate social responsibility is proposed.

Anyone who impartially peruses the evidence against paraquat is bound to conclude that the risks it poses are unacceptably high. Only those who cannot turn their attention away from the economic dimension of commercial agriculture will have any cause to argue otherwise. Yet the reality is that public officials are constantly susceptible to being influenced by powerful commercial and political interests and are liable to overturn sensible decisions at any time. In the case of

Malaysia's ban on paraquat, it had already been weakened in June 2005 by the exemption granted for its use on oil palm trees that are less than two years old.

But the re-registration of paraquat products, effective November 2006, puts the country in a bad light internationally, since it has the distinction of being the first Asian nation to have imposed the ban on paraquat. A backtracking on this decision indicates that it has put the interests of industry above those of workers' health and safety.

The materials for this book have been gathered from the extensive literature on the pesticide menace that has been published by health organisations, public interest groups, researchers, the media and others, from academic research into the plantation industry and from interviews with the people who have been intimately connected with plantations and with the struggle for justice for the workers.

Besides plantation workers, farmers are also being exposed to paraquat due to the high usage of the herbicide in rice paddies. Paraquat is also used in vegetable farming.

Although this account begins with a background of the rubber and oil palm plantations in Malaysia, in which Indian labourers formed a significant force, paraquat use affects many communities, including the growers in land resettlement schemes like Felda and Felcra, small holders in the Malay hinterland states of Kelantan, Terengganu and Pahang, plantation workers in Sabah and Sarawak in Borneo, and rice, vegetable and fruit farmers.

Further, the working conditions of workers in Malaysian oil palm and rubber plantations are quite similar to those workers in various types of plantations in other parts of the world. So, the workers in coffee plantation in Bazil and Guatemala, banana plantations in Costa Rica, oil palm plantations in Indonesia, pineapple and banana plantations in the Philippines and tea plantations in Sri Lanka share a common experience in many ways.

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CHAPTER TWO

PLANTATION AGRICULTURE, PLANTATION LIVES

From Plantations To Corridors Of Power

It is a very long way from the headquarters of the Food and Agriculture Organisation (FAO) in Rome to the oil palm plantations in hot, humid Malaysia where nameless workers weighed down by spray tanks of paraquat risk illness and injury daily as they become soaked in the toxic chemical. Regulations, policies and programmes are debated and adopted by international bureaucrats, many of whom may not be aware of the ground realities where the consequences of their decisions play out. To bring these two worlds face to face, Tenaganita and PAN AP sponsored a visit by an outspoken former sprayer, now a

workers' activist, to the second Conference of Parties of the PIC Convention (PIC COP2), held in Rome, from September 26-30, 2005.

Nagama Raman,[1] 48, a survivor of years of exposure to hazardous pesticides, came laden with stories of her hard, dangerous work in the plantations. PAN UK, PAN AP and the Berne Declaration of Switzerland had organised a meeting to coincide with the main conference. About 50 delegates representing the participating governments on all continents, FAO officials, and the chemical industry packed into the hall. NGO events like these, after all, were known to be rather livelier than the sessions where official business was transacted.

This was Nagama's first ever trip to Europe, and she relished the occasion. There were many moments for her to enlighten the meeting about the realities of spraying paraquat in the hot, humid conditions when the pesticide spray clung to the workers' bodies. Although masks and gloves were provided, it was too uncomfortable and suffocating to use them while trudging through the undulating, sometimes hilly terrain – not that the masks and gloves were really effective. It was no wonder that her health suffered. Nagama was a little nervous about speaking before these high level officials, but the opportunity to tell her story to the PIC negotiators was too important for her to be distracted. Afterwards, the delegates commented, "This is what we all need to hear!" The US Environmental Protection Agency representative even asked, "Why isn't she giving a presentation in the main PIC meeting?"

Like her parents before her, Nagama began her working life at the age of 15 in Sungai Kawang Estate in Bentong district in the state of Pahang. The estate, situated in central peninsular Malaysia, is part of the public-listed Kuala Lumpur Kepong plantation group. Her first task was collecting rubber seeds, which are grown for re-planting. Hers was a typical estate worker's family that has to put all hands to work to supplement the income her rubber tapper parents brought home. Nagama dropped out of school after her primary education in a Tamil

medium school in Sungai Kawang and joined the plantation labour force.

At 17, Nagama had become quite deft at tapping the rubber trees, cutting a narrow, curling strip of the bark just enough to cause the latex to flow copiously but not so deep as to damage the tree. It was a skill she learnt from helping her parents during her school holidays and now it served her well. She got a job as a rubber tapper in her estate. Then at 21, Nagama married and moved to Perak state in northern peninsular Malaysia. Later she moved to the Kapar district in central Selangor state, where she now resides.

In Kapar, Nagama lived on Jeram Estate, an oil palm plantation where pesticide spraying was among the few paying jobs available to an unskilled woman. So Nagama joined the ranks of paraquat sprayers. The spray gang had to dilute the paraquat concentrate with water before filling the solution into four-gallon canisters. They worked the pump handle until enough pressure built up in the tank for the paraquat mixture to squirt freely from the nozzle. Then they would hoist the tank on their backs and cover their designated area until the tank ran dry. After that it was a long trek back to the starting point which served as their filling station. If they were lucky, the filling truck would be available to follow the sprayers as they progressed through the fields. This was the sprayers' routine for seven hours for 262 days a year.

As the workers endured their daily dose of exposure to paraquat, they began to suffer symptoms like fatigue, blurred vision, frequent tearing of the eyes, giddiness, itch and rashes. Sores appeared on their backs where the skin was constantly wetted by leaking spray tanks. There were breathing problems aggravated by inhaling the paraquat mist that blew in their faces with the constant gusts of wind. Other problems include loss of appetite and discolouration and peeling of the nails.

It was no wonder that there were problems. Nagama said: "I used to mix the paraquat with my bare hands because I was not aware of what this would do to me…" This was an additional risk in Nagama's case, but it is more common for the paraquat

solution to be mixed by other workers and delivered to the spray gang.

Nagama began to experience fatigue, poor vision and sores in the genital area. Worried about her symptoms, Nagama sought treatment at a private clinic outside the estate. "The doctor asked whether I was a pesticide sprayer, and when I said 'yes', he told me to find other work," said Nagama. But that was not an option for Nagama. From her standpoint, the job included living quarters, since that is among the amenities provided by the plantation management. The other benefits included electricity and water supply for a few hours daily, a plot of land for a kitchen garden – each kindness an additional card she could hold on to in the poker game of her life. Her husband had been medically boarded out, and it fell upon her to ensure that there was a roof over their heads. So Nagama continued to work as a sprayer, never losing hope that the lot of pesticide sprayers could be improved.

Armed with the doctor's opinion, Nagama took up the matter of the workers' health problems with her supervisor, the estate conductor. She urged him to repair the leaking tanks, but the conductor dismissed her complaints as that of just one individual. That brought out the fighting spirit in Nagama.

The spray gang consisted of migrant Indonesian workers and two Malaysian women, including Nagama. Before long both the women sprayers had developed similar symptoms. "However, the conductor brushed them aside, saying that I was causing trouble," she said.

Finding it a struggle to meet her spraying targets, Nagama pushed the estate management to improve the sprayers' working conditions. "But I soon realised that no one was listening to my complaints," said Nagama.

"The Indonesian sprayers were bolder than the Malaysians. They were not about to take this kind of ill-treatment, so they went on a one day strike. I joined them and that made the management very angry. They accused me of instigating the strike action."

Such recalcitrance was not to be tolerated and Nagama had

to be made an example of. The mandore, *(her immediate field supervisor)* a woman, assigned her to hard labour. She was transferred from her spraying work to loading and unloading fertiliser bags. Hauling the heavy bags onto the lorry and dropping them off in the fields is a task more suitable for mules than men, and it soon took its toll on Nagama. In no time, she was down with severe back pains.

"It was very difficult for me do the work, but I was not going to let them break my spirit," said Nagama. "I forced myself to turn up for work without fail. The male Indonesian workers who had gone on strike could not bear to see Nagama's ordeal. They asked the management what she was doing in the fertiliser gang, which was made up only of able-bodied men.

To counter their criticism, the mandore transferred Nagama back to the pesticide sprayers gang, but increased the workload of the group. However, the target the mandore imposed was excessive and after some eyeballing between workers and management, order was restored.

In time, new battery-operated pumps with shower nozzles replaced the heavy metal tanks that were used earlier. But these posed a problem during the frequently windy conditions because the pesticide drift from the nozzle would blow into the workers' faces, choking them and causing the eyes to smart and tear freely. Nagamah pointed this out to the mandore, the local squire in the plantation's feudal hierarchy, who ignored her complaint. Nagama responded with non-cooperation and civil disobedience. She stopped spraying when the wind blew.

"The NUPW served no purpose, so I decided not to seek its help," she said of the workers union. "I felt the union had failed the workers. The union promised that sprayers would receive minimum monthly wages of RM600 (USD167). We earn only RM470 (USD131)."

Nagama's slight frame does little to hide her self-assured air. She fought her own battles until she met two Tenaganita activists in 2001 who were bringing plantation workers the message of their basic rights and helping victims obtain

redress. Maneyvannan Velue was a labour activist, and Arjunan Ramasamy, a retired harvester and ex-union grassroots activist.

Encouraged by the activists, Nagama took part in several training programmes for empowering women that were organised by Tenaganita. As she became more aware of her rights as a woman and a worker, Nagama became a confident, outspoken advocate for women affected by pesticides like paraquat. Soon, she was ready to tell the world about the injustices committed towards women pesticide sprayers, and their powerlessness in an industry that puts profits before lives.

The campaign to ban paraquat has taken Nagama to Kerala, Andhra Pradesh and Tamil Nadu states in India. In Kerala, in 2002, she saw the consequences of endosulfan use on the farming community and was pleased that the state had banned the use of the pesticide. It spelt hope that the tide would turn against paraquat, the chemical that has harmed her life. Closing the door to paraquat had opened a corridor to world opinion that is opposed to harmful chemicals. In Trivandrum, Kerala, she met with the then Opposition Leader Achunathan, who is currently chief minister of the state, briefing him on the situation of plantation workers in Malaysia. Nagama also told their story at the Asian Social Forum, a massive gathering of the continent's civil society movements that was held in Hyderabad, Andhra Pradesh in 2002. In Tamil Nadu, she met with women farmers, sharing experiences and building solidarity against the agro-chemical peril.

After Rome, it was Hong Kong in December 2005, when civil society organisations held parallel meetings at the WTO talks. She was also in Bangkok in 2004 during the International Forum for chemical safety meeting. This is a government forum where side events are held by the pesticide industry.

Wherever Nagama goes, she speaks on behalf of women sprayers, the daily risks they face, the discrimination, the

power play, the lack of union support for the concerns of pesticide sprayers, and the unethical practices of Syngenta, the leading producer of paraquat.

At home in Malaysia, Nagama participates actively in the campaigns of Tenaganita/PAN AP on paraquat and in organising women pesticide sprayers. In 2003, she attended a meeting on health issues of plantation workers organised by the Ministry of Health. She highlighted the concerns of women pesticide sprayers at the meeting, chaired by S. Sothinathan, the then Deputy Minister of Health. Nagama raised issues related to training for pesticide sprayers and the lack of implementation of the Occupational Safety and Health Act 1994. She was pleased that the deputy minister had a sympathetic ear for the plight of women pesticide sprayers.

As her health deteriorated, Nagama had to give up her work as a pesticide sprayer. That meant she had to leave the plantation and the security of having an estate home. Nagama had managed to buy a low-cost house in Mentakab district in Pahang state, where her parents and two children live, while she lives with her husband in a rented house in Kapar town, in Selangor state. At 48, Nagama is too ill to work as a pesticide sprayer.

Today, Nagama's spirit is as strong ever. Companies like Syngenta that continue to produce paraquat will feel the brunt of her anger and her pursuit of justice.

Handling Poisons For A Living

Mardiah Abdullah[2], 45, a former pesticide sprayer, has never been to school. Her mother, who became widowed when Mardiah was 10 months old, earned a pittance during peanut-planting season, and took whatever other work came by at other times. It was all she could do to keep her four children fed and clothed. "None of us went to school because we couldn't afford it," Mardiah said of

her difficult childhood, wearing a stoic grin. So life actually looked up when her mother found a job as an unskilled worker in Ulu Bernam Estate, an oil palm plantation belonging to the Danish-owned United Plantations group.

Working life began early for Mardiah, helping her mother with her tasks as a weeder. Then, at 16, she joined the estate's pesticide sprayers' gang. "My problems began when I started spraying that strong medicine, 'Kopi O' (black coffee)", said Mardiah, referring to paraquat by its colloquial name. "We had to spray around the trees and along pathways. After spraying, the weeds die very quickly. Every time I sprayed, the smell was unbearable. It even penetrated the mask. I felt suffocated … giddy … sometimes nauseated … my hands itched and I had sores on my back and thighs and around the genital area." The agonies she described were belied by her easy manner and ready smile, as if these were matters that must be taken in one's stride, and are quite normal for people to have.

Indeed, there was little that Mardiah or anyone else in her shoes could do. With no education or skills, what they could not cure they had to endure. It was either spray or walk out on the job. There was no third choice.

"The mandore *(the immediate field supervisor)* told us that we would be handling poison and gave us masks and gloves. But it was suffocating to use the mask, and the gloves made our hands sweat. When we couldn't bear it, we took off these things," Mardiah said. The supervision on protective gear was not strict. As the workers sprayed, they walked through the weeds, and their clothes would become wet as the paraquat-soaked leaves brushed against them. "We would be drenched in spray by the time we were done," said Mardiah.

When the itchiness and sores were bad, Mardiah would go to the plantation's group hospital. "The nurse would give me an injection and a white lotion to soothe the itch," she said. When the mandore saw the problem, he would switch Mardiah from spraying to other general work, such as applying oil to the roots of the *lallang* grass to stop them from growing, and pulling out oil palm seedlings that had sprouted around the

trees. "When my condition improved, I would return to my work as a sprayer," said Mardiah.

"I remember one bad accident in the fields. The nozzle of the spray tank had become clogged with grass, so I tried to open and clean it. But the spray mixture splashed into my eyes and they began smarting," said Mardiah. There was no water for washing close by, but her co-workers used the water from their drink bottles to wash out her eyes. "The next morning, my eyes were swollen and I could not see," Mardiah said. "I was referred to the government hospital in Teluk Intan and I was warded there for more than a week. I had to grope about because I couldn't see, and the nurse had to help me to the toilet. I felt giddy."

Two days after she was discharged, Mardiah returned to work. She was not given spraying duty immediately, but did other general tasks. "When I was better once again, I went back to spraying."

Mardiah was a sprayer for eight years, earning about RM9 (USD2.50) per day, including a cost of living allowance. She would suffer frequent back pains from carrying the four-gallon spray tank on her back. "It was very difficult to carry a full pump," she said. And there was frequent itching and sores due to contact with the paraquat spray. "I was hospitalised at the group hospital about 10 times during those years."

The estate had a visiting medical officer who would examine Mardiah if she came to the hospital during his visit. There was no monitoring of sprayers' exposure to paraquat, she said, and she was never given a referral to a specialist.

"Then one day, my good friend Saroja drank paraquat and died," said Mardiah. "We were close. She had some problems at home. It was too sad," she said, still pained at the memory. "I had had enough of spraying. I decided to leave my work and went back to my in-laws' *kampung* (village)."

Her in-laws lived in Sungai Besar, a coastal town in Selangor state in central peninsular Malaysia. "I had no house, no income and I had to look after four children," said Mardiah. "I did odd jobs such as washing plates for RM10 (USD2.80) a day

to make sure there was food for the children. After about three months, my relatives said they could not continue to have me and the children."

Mardiah managed to find a more permanent job at a small factory in Teluk Intan in Perak state. "The factory makes aluminium pots and pans. I have to wash these items with a yellow chemical mixed with water." The chemical causes Mardiah's hands to smart and her fingers become swollen. The fingernails on her hands have become corroded. The factory owner makes the workers use their bare hands to wash the pots with this substance after they are moulded into utensils. Unable to read, Mardiah cannot identify the chemical from the label on the container.

Her wage is RM18 (USD5) per day, amounting to about RM300 (USD83) a month. "That is better than the RM10 (USD2.70) I got doing odd jobs but I have to pay RM150 (USD42) for rent. I struggle with the balance to look after the children," said Mardiah. Her eldest child is 26, but is having difficulties finding a job because, like Mardiah, she is illiterate.

Would she consider going back to paraquat spraying, since a job on the estate comes with housing provided? Mardiah sits back with a start at the question. "No, it is very hard work," she said. "I have suffered enough."

Mardiah had not attended any training programmes on pesticide safety in the eight years she worked as a sprayer. When asked whether she had been for any courses on pesticide safety, she did not comprehend the question, and gave a blank look. The little she knows is what the mandore had told her. Mardiah is the kind of worker that plantations employ to take on hazardous jobs like spraying paraquat. She is unaware of her rights and is in no position to bargain for a better deal. When community organisers tell workers like Mardiah about their job hazards, they usually ask their management to assign them to other duties. Mardiah is an economic statistic that Malaysia's poverty eradication programme had overlooked. She believes that she has escaped from the clutches of paraquat, but is now the victim of another chemical.

To understand the importance of the plantation sector to the Malaysian economy it would be useful to examine the government's plans for the development of this sector. A key document produced by the Ministry of Plantation Industr ies and Commodities[3] provides insights into its continued growth and expansion. All these have implications for the workforce and the chemical inputs that would be required to sustain a monoculture industry.

PLANTATIONS

Plantation industries and commodities remain an important sub-sector of the agricultural sector contributing five per cent to the GDP and providing employment opportunities to 1.5 million people. Its contribution to the country's export earnings averaged RM60 billion per year during the period between 2001 to January-June 2005.

Under the 9th Malaysia Plan (RMK 9, 2006-2010), the agricultural sector will be the third engine of growth for the economy after the manufacturing and services sector. The agricultural sector is targeted to grow at five to six per cent during RMK 9 with significant contribution from oil palm, rubber, cocoa, timber and pepper.

The development of the plantation industries and commodities sector will continue to be given emphasis in other national development plans such as the Outline Perspective Plan 3 (OPP3, 2001-2010), National Agricultural Policy (NAP) and Third Industrial Master Plan (IMP3, 2006-2015).

OIL PALM

At present, Malaysia is not only the largest producer and exporter of palm oil, but also the biggest exporter of oils and fats in the world. The Malaysian oil palm industry continues to contribute significantly to the country's economic development.

The oil palm industry continues to be an important foreign exchange earner for the country, with export earnings amounting to RM30.4 billion in 2004. The Malaysian palm oil industry continues to remain as the largest export revenue earner among the primary commodities.

The industry provides employment to 380,000 workers in the oil palm plantations, Government land schemes and independent small holders, thus becoming an increasingly important industry in generating income for the rural population. A substantial number of people are also employed in both the downstream and supporting industries, such as milling, processing, manufacturing and trading. Malaysia has invested heavily in R&D as well as marketing and promotion of palm oil worldwide and it has now gained acceptance in more than 140 countries as a nutritious and cost-efficient vegetable oil.

The total acreage planted with oil palm increased by 8.6 per cent or 0.3 million hectares to 3.8 million hectares in 2004 from 3.5 million hectares in 2001. Sabah remained the state with the largest oil palm acreage of 1.16 million hectares. In 2005, the total acreage for oil palm increased by three percent to 3.9 million hectares.

Oil palm cultivation in Malaysia is based largely on the plantation management system and government-organised smallholders' schemes. Private plantations account for 60 per cent of total oil palm acreage, followed by the Federal Land Development Authority (FELDA) (16%), other Federal and State Agencies (15%) and independent smallholders (9%).

The People's Republic of China (PRC) emerged as the biggest market for Malaysian palm oil, followed by the European Union

(EU) and Jordan. Palm oil is exported to PRC, EU, Pakistan, India, Japan, Jordan, Singapore, Bangladesh, USA, Egypt, UAE, Hong Kong, South Africa, Iran, Vietnam, Myanmar, Taiwan, Algeria, Philippines, Australia, and others.

Expansions

MALAYSIA AS A PALM OIL HUB

The Government has established a Cabinet Committee on Palm Oil Competitiveness (CCPO) to develop Malaysia as the region's Palm Oil Hub as well as to increase the competitiveness of Malaysian palm oil. The CCPO will formulate policies and resolve issues affecting the industry. The development of the Palm Oil Industrial Cluster (POIC) in Sabah marked the first step in developing Malaysia as a Palm Oil Hub.

COMMERCIALISATION OF RESEARCH AND DEVELOPMENT

The commercialisation of R&D findings will be accelerated through the establishment of specific capital funds to assist local entrepreneurs investing in the palm oil industry to participate in equity ownership of joint-venture companies.

The Malaysian Palm Oil Board (MPOB) will continue to forge strategic research collaborations with major global manufacturers of petroleum and petroleum-based products to expedite the utilisation of palm oil or palm-based oleochemicals. The Advanced Oleochemical Technology Division's (AOTD) Incubation Centre under MPOB will undertake such collaborative studies with international R&D centres and multinational companies (MNCs), service laboratories and testing and certification centres in order to make Malaysia an International Research Centre for Oils and Fats.

BIODIESEL

The Government has decided that palm diesel be introduced to replace petroleum diesel as a new source of biofuel for

transportation and industry usage. Palm diesel has been well researched by MPOB and is recognised as an environmental-friendly and viable fuel for automotive vehicles. The utilization of palm diesel will increase the demand for palm oil and help to reduce its stock level and thereby stabilize its price. The National Biofuel Policy has been formulated to encourage the production and usage of palm diesel B5 (blending of five percent olein with diesel) as an alternative, environment friendly and renewable energy source for transportation and industry. The Biofuels Act is in the process of being enacted and it will require palm diesel B5 to be used by diesel-driven vehicles in the country.

BIOTECHNOLOGY

MPOB has been actively involved in carrying out R&D in oil palm biotechnology to transform oil palm from a commodity-based crop to an industry-based crop. The areas of biotechnology focused for the development of the plantation industries will include bio-informatics, genetic engineering, metabolic engineering, genomic and DNA chip technology.

PROSPECTS

The demand for palm oil and its products is expected to increase due to competitive prices, strong demand for palm biodiesel in the export market, its techno-economic advantages in edible-non-edible applications, increasing world population and further trade liberalisation under the WTO agreements. The export of Malaysian palm oil is expected to increase to 12.8 million tonnes in the 2006-2010 period in tandem with the growth of global demand. However, increased environmental concerns of large-scale planting of oil palm, competition from competing oils and products as well as the emergence of low-cost producing countries will continually challenge the Malaysian oil palm industry.

The Malaysian oil palm industry is expected to spearhead the development of the agricultural sector. The planted areas target of 4.6 million hectares by 2010 is achievable given the

availability of land in Sabah and Sarawak. The growth of crude palm oil production, however, will have to come from increased productivity from the planted areas as environmental concerns will restrict the opening up of new lands for oil palm cultivation.

RUBBER

The rubber industry performed remarkably well from 2001 to 2004, with total export earnings from the industry, including heveawood products, increasing to RM19.5 billion in 2004 from RM11.8 billion in 2001. The export of natural rubber increased by 35.7 per cent to 1, 114, 163 tonnes in 2004 from 820, 854 tonnes in 2001. This ranked Malaysia as the world's third largest exporter of natural rubber. The demand for natural rubber is projected to increase with the growth of the motor vehicle industry worldwide, particularly in the fast growing consumer economies of the People's Republic of China, India and Eastern Europe.

The total acreage of smallholdings and estates under rubber declined by 7.7 per cent to 1.29 million hectares in 2004 from 1.39 million hectares in 2001. During the 2001 to 2004 period, smallholdings under rubber decreased by 5.03 per cent from 1.22 million hectares to 1.16 million hectares, while estate sizes contracted by 25 per cent from 168, 700 hectares to 126, 500 hectares. In 2005, the acreage planted is expected to decline slightly to 1.25 million hectares.

Malaysia continues to be the world's third largest producer of natural rubber, with production increasing by 32.5 per cent to 1, 168, 730 tonnes in 2004 from 882, 070 tonnes in 2001. The increase in production was due to the recovery in rubber prices and the wider adoption of the Low Intensity Tapping System (LITS) by smallholders who contributed 94 per cent of the total NR production in 2004.

THE STORY OF PLANTATIONS

Plantation agriculture came into its own with the advent of colonisation. The colonial rulers were able to use their control over their subject nations to press gangs of labourers to cheaply grow produce that was needed for the colonisers' economic growth. The seeds of poverty were already sown among plantation communities from these beginnings. After the Second World War, pesticides came into the picture supposedly to improve productivity, but brought along with them ill-health too. These strands became inextricably linked in a vicious cycle of poverty, vulnerability and exploitation that keeps the plantation workers marginalised and relegated to the fringes of society.

Plantation workers in Malaysia have used paraquat since the 1960s. Being powerless, they have not been able to halt the use of the chemical. As a result, the plantation workers suffer the harmful health effects of paraquat and often do not have access to treatment. The cycle of ill health, pesticide poisoning and poverty continues.

This is the story of plantation agriculture and plantation lives.

Poison Control**: For the sake of agro-workers**

"The Malaysian Indian Congress (MIC) President was last week reported as saying "this was a classic case of the poor being denied their rights" when referring to an incident involving a "land grab" *(Malay Mail, April 22)*

Nowhere is such a comment more relevant when it comes to the proposed lifting of the ban on paraquat, which is now being hotly contested by the poor – this time the plantation workers over their rights to better health"

- Dzulkifli Abdul Razak,
Vice Chancellor, Universiti Sains Malaysia
New Straits Times, 5 April 2005

Plantations together with tin mining formed the foundation of the then Malaya's economic development during the period of British Colonial rule and for more than a decade after Independence in 1957. The plantation and the tin mining industries which brought labour and capital transformed Malaysia's near subsistence economy into an export-oriented market economy.

Plantation agriculture in Malaysia had its roots in sugar, coffee, gambiar, pepper and tapioca plantations. When prices of these crops declined, the planters were forced to switch to crops like rubber. It was the success of European experiences elsewhere in the plantation industry such as the coffee haciendas in Brazil and Costa Rica that propelled the British colonial government to introduce plantation agriculture in Malaya. In the mid 1880s, many European owned coffee plantations were established particularly in Selangor. But coffee growing seemed an unsustainable venture as its prices dropped. Coffee was replaced with rubber; the demand for its products was burgeoning in a rapidly industrialising Europe and America.

The colonial government openly encouraged the opening of European owned rubber plantations in Malaya. The British provided incentives to Europeans for the development of rubber plantations through liberal land policies, financial assistance, infrastructure facilities, rubber restriction schemes and cheap labour.[4]

The plantation sector was a Western enterprise. The capital came from Europe, the management was European, the workers were alien and the profits were exported.[5]

Land Policies And Agribusiness

The genesis of plantation agriculture in colonial Malaya came from the liberal land policies of the British. Since land was state-controlled, the colonial government was able to grant large tracts of land for mining and plantations. The self-sustaining forests of the Malay States were converted

into large plantations. To this end large acreages of the best land were alienated to the ever increasing number of European planters.[6]

Land use and land allocation were in favour of plantation development as shown in the vast tracts ceded to European plantation companies, like Harrisons & Crossfield, Barlow Boustead, Guthrie, Socfin and United Plantations. The colonial principle or the legal fiction was that all the land in the State belonged to the Sultans. This principle was embodied in various pieces of legislation relating to land. The colonial laws empowered the Sultans to alienate land to anyone they favoured, including foreigners. But in reality it was the British Residents who decided the allocation or sale of the lands. Colonial land policies and laws were protected by the local elite moulded in the colonial education system.

This led to the strong growth of the plantation as a Western enterprise expanded through alienation of land to European planters.

Table 2.1
Expansion Of Estate Area Planted to Rubber, Federated Malay States, 1906-35

YEAR	HECTARAGE
1906	40,148
1908	71,744
1911	72,838
1922	570,300
1935	815,500

Sources: Voon, 1976: 73-75; Barlow, 1978: 444; Selvakumaran, 1994:33

Liberal land policies resulted in the marginalisation of peasants, traditional values, knowledge and economy. The British Colonial administration's hostile attitude towards peasants mainly through discriminatory regulations was an obstacle for peasant participation in rubber growing. To discourage peasants from growing rubber instead of food crops, the colonial government imposed a "no rubber condition" on new land acquired by peasants after 1910. Those who wanted to grow rubber had to pay higher taxes.[7]

The establishment of a legal framework to protect private property rights was the most important factor in the development of the plantation sector. In the early 20th century, land was leased and granted very cheaply, initially free of rent for the first 25 years. Later thousands of acres were leased for 999 years.

The liberal land policies were accompanied by other policies such as cheap loans, infrastructure facilities and cheap labour to guarantee the unhindered expansion of plantation agriculture, the western enterprise which is in reality agribusiness.

The term agribusiness means more than just owning and cultivating land to raise and produce crops and livestock (agriculture production). The term also refers to the financing of agriculture, and the manufacturing, transporting, wholesaling and distribution of machinery, fertilizers, chemical poisons, seed, feed and packaging materials (agriculture inputs). Agribusiness also manufactures, processes and markets food (agricultural outputs).

> …Agribusiness continues to grow, becoming increasingly dominated by large corporations, often multinational in character, while solidifying its claim as the nation's number one industry, its apostles and political disciplines never seem to tire of extolling its seemingly endless number of virtues: a model of agricultural "efficiency" – the very soul of the so-called "free-market" system.[8]

The primary objective of corporate agribusiness globally is to maximise profits, minimise costs and run their business with minimal accountability.

Agribusiness has access to land, capital and technology as government policies and laws tend to favour enterprises rather than small farmers, local and indigenous communities.

A clear example of this is the United States. As agribusiness continues to grow and become dominated by large corporations, the family farm system is on the threshold of eradication. In calling for public accountability of agribusiness, Rev. Maurice Dingman, a former Catholic bishop of Des Moines, Iowa stated:

> There is a grave temptation in our system of capitalism that a corporation will use the land …..to its advantage to gain an undue profit. I'm not saying it's wrong to work for a profit, but I say it's terribly hard to control that profit motive. If they can make a dollar, they're usually going to make it. And if it destroys the land, it doesn't matter. But a farmer doesn't view land as a commodity. Farmers understand that land has a social significance… If corporations in Chicago own land in Iowa, do you think they care what happens to the land as long as they're making profits and can tell their shareholders that they will get big dividends?[9]

The growth of the plantation industry in Malaysia is reflective of agribusiness as defined above.

The state governments allowed European planters and agency houses to take ownership of vast tracts of tropical rainforests to turn them into rubber and later oil palm plantations. These rainforests contained many ecosystems, a wide variety of fauna and flora and a multitude of insects and animals. Malaya's vast natural heritage was razed to the ground.

The indigenous people of Sarawak have for centuries depended on the forest with each community having a system of

native customary rights over the forest areas. The communities regulated land use within their territory. On the other hand, the state granted licences to log the forests without mapping the communal use of lands by the natives. Concessions are based on the blanket coverage of forests. Indigenous communities know that indiscriminate logging pollutes water catchment areas. "One of our greatest concerns is the pollution of catchment areas", says Thomas Jalong of Sarawak in a paper presented at an environment conference in 1996. Indigenous people were relocated without prior consultation to make way for dams. Increasingly, native customary lands are being cleared for large oil palm plantations. The natives do not want to work in the plantations, says Jalong. Consequently, as had happened in Malaya during the colonial era, migrant labour form the majority of plantation workforce in Sarawak.

An investigation in September 2006 by Suhakam, the Malaysian Human Rights Commission, into a complaint by the Penans, an indigenous community of Sarawak, revealed the total disruption of their lives due to the invasion of plantation development. "We found the forests where the Penans used to hunt for meat and collect jungle produce have been cleared by private companies. We saw with our own eyes the devastation of the forests," a commissioner said. "They have absolutely no means to earn a livelihood or even to find food," according to a *New Straits Times* report of October 14, 2006.

Colonial laws and policies had a devastating effect on indigenous communities, particularly in relation to land and land use. The *orang asli* communities in Peninsular Malaysia lost land, mobility and access to resources.

Arjunan Ramasamy, a third generation plantation worker from Ulu Bernam in Selangor, recalls the loss of a river. "The beautiful river disappeared; it was filled up to plant oil palm." He recollects his mother and her friends bringing home vegetables like the small bitter gourd from the wetlands. Prawns and fish were abundant. The Malay workers collected edible fern from these areas.

Soon the wetlands made way for oil palm plantations and

the population of river fish and prawns declined. River fish was an important and cheap source of protein for plantation workers and riverine communities.

The plantation industry transformed the social, political and economic landscape of Malaysia. 'Scorch the earth' land policies resulted in irreparable economic, sociological and biodiversity loss in Malaysia. These policies obliterated within a few decades Malaysia's vast natural heritage which took million of years to evolve. The environmental degradation which began during the colonial period continues unabated through industrialization and urbanization as well as through continued expansion of the plantation industry in tropical forests.

It is in this context that the continued use of paraquat is examined in this book.

Plantations

What are plantations?

…the plantation has been defined by the International Labour Organisation (ILO) as:

> any agricultural undertaking regularly employing hired workers which is situated in the tropical or subtropical regions and which is mainly concerned with the cultivation or production for commercial purposes of coffee, tea, sugar-cane, rubber, bananas, cocoa, coconuts, groundnuts, cotton, tobacco, fibres (sisal, jute and hemp), citrus, palm oil, cinchona or pineapple; it does not include family or small scale-holding producing for local consumption and not regularly employing hired workers (The Plantation Convention, No. 110, 1958).

Following the ILO concept, therefore, the major characteristics of plantations are that they (i) are located mainly in tropical and sub-tropical regions, (ii) specialised in the products of a single export-oriented commodity, and (iii) demonstrate a high degree of specialization in certain crops

and employ, on a regular basis, hired workers, most of whom live on plantations. In other words, the 'plantation' describes the system which brought together land, capital, management and labour from all over the world in areas which offered opportunities for new agricultural products for export.[10]

In Malaysia, the official definition of a plantation – whether of rubber, oil palm, coconut or some other crop – is any "lands, contiguous or non-contiguous, aggregating not less than 40 hectares in area.[11]

A sociological definition of plantation:

> Wherever the plantation has arisen, whether imported from the outside or otherwise, it has destroyed antecedent cultural norms and imposed its own dictates, sometimes by persuasion, sometimes by compulsion, yet always in conflict with cultural definitions of the affected population. The plantation, therefore, is also an instrument of force, wielded to create and maintain a class-structure of workers and owners, connected hierarchically by a staff-line of overseers and managers.[12]

In the context of workers, plantations cannot be defined only by the nature of their production and participation in the economy. "The plantation is about labour force control" says Maneyvannan, a labour activist and community organiser. He adds, "It is an institution that isolates and controls workers. The plantation management has absolute authority and control over workers, over what it does from production to use of chemicals. My parents who worked all their lives in Bukit Cheraka Estate in Selangor are prohibited from entering it as I am a labour activist. This has affected the social lives of my parents as their relatives and friends are in Bukit Cheraka. And as I'm not allowed into this estate, I cannot mobilise the workers there"[13]

Estates are states within a State. The plantation or estate is a total economic and social institution. It is a class structured organisation. The old plantation system has survived despite

Malaysianisation of plantation ownership, rapid economic development and industrialisation. It is this situation that has resulted in the marginalisation of plantation workers.

An insight into the location, design and structure of plantation housing mirrors the class structure in estates. The homes of plantation managers are architectural showpieces built by the toil and sweat of plantation workers. In many plantations, the location of homes of management, non-executive staff and labourers is testimony to the apartheid in the plantation system. The manager's bungalow is perched on the hill, the assistant manager's bungalow is on a lower hill, the staff quarters are lower and the lines of workers houses are in the lowest terrain.

The apartheid practised in the location, structure and size of houses for management and that of labourers is a strong indicator of class and stratification of a community established for economic output. The manager's bungalow with its swimming pool and workers quarters is a symbol of prestige and power. The spacious bungalows reflect European ownership of plantations reflecting English and French architecture.

The plantation is a highly hierarchical organisation that emphasizes the concentration of power, control and coercion for efficient production. Therefore the very nature of the plantation as an organisation discourages social intercourse between plantation management and their subordinate staff.

The participation of management and their wives at such events as sports are seen as duties and not socialisation. The managers see it as important to mediate in a whole range of problems such as family quarrels, disputes among neighbours, personal problems, supervisory staff disagreements and even temple disputes.

The relationship between managers, staff and workers is often described as paternalistic. "Do not bite the hand that feeds you" was the paternalistic response from plantation management when workers protested against poor working conditions or low wages.

Diagram 2.1 **Organizational Structure of Large Plantations**

Source: Selvakumaran, 1994: 14

It was the gross abuse of plantation workers that led the colonial authorities to establish labour departments and to enact labour legislation to protect workers' interest. But the enforcement of labour legislation has been weak as the management wields authority and power which is difficult to change. Additionally, the geographical and social isolation make it difficult for enforcement of labour laws and the monitoring of the health and safety of workers.

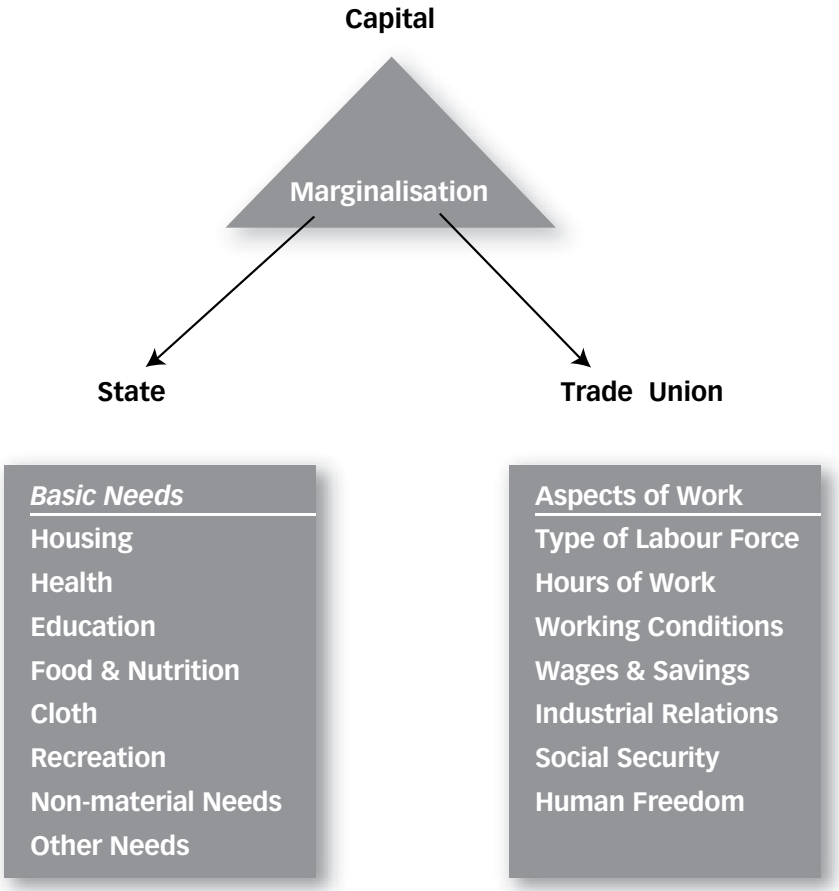
Marginalisation

Marginalisation has many facets and contributory factors, ranging from social, political, economical and cultural conditions. The process of development also contributes to marginalisation of certain sectors of a

population who become invisible in development plans. For example, the rural development plans of Malaysia have not been extended to plantations.

Plantations are classified as private property and therefore the government expects the plantation owners and management to look after the socio-economic welfare of their workers in their property. This position of the government has led to the erosion of the welfare of plantation workers and

Diagram 2.2 **Model of Marginalisation of Plantation Labour**



Source: Selvakumaran, 1994: 9

their families. Government policies and rapid urbanisation have led to the spatial marginalisation felt by the plantation workers. Spatial marginalisation not only results in feelings of isolation but also involves the denial of specific human rights. As plantation land is seen as private property, the workers can be denied visitors, participation in political party events (as political parties can be denied access into the estate), festivals, processions and public meetings as all these have to be sanctioned by the management. Dismissed and retrenched workers find it difficult to maintain social relations with the plantation community they had once been part of.

The process of marginalisation is reflected by some of these characteristics:

- Poverty, low wages, hazardous working conditions, lack of social and welfare provisions, exploitative working conditions, poor quality of life and standard of living, gender discrimination and political exclusion.

Marginalisation occurs in the following ways:

Marginalisation as social and cultural isolation

Social and cultural marginalisation often occurs among immigrants through domination by the dominant or native population. The very location of plantations in isolated areas in the country has excluded plantation workers from active participation in socialisation and cultural institutions.

Marginalisation as economic inequality

Economic disparities grow due to differential rates of growth in money wages, lack of occupational mobility, poor overtime pay and absence of opportunities for additional jobs.

The geographical isolation of plantations and spatial marginalization are factors that have contributed to the low economic status of plantation communities. Increasing

urbanization saw a relative economic decline of plantation communities.

Marginalisation as a condition of poverty

Plantation workers, due to poor wages, low education levels and lack of employment opportunities continue to live in poverty. In terms of basic needs as defined today plantation workers face increasing poverty.

With the growth of human consumption and societal integration, the notion of basic needs has also changed. It is now useful to define basic needs at three levels, moving from the most fundamental to more abstract:

1. Survival: Food, water, essential healthcare, sanitation, clothing, shelter;
2. Capabilities: Education, energy, transport, communication, security, access to resources;
3. Civic: access to information, political participation.

The first is necessary for survival and to live a long and healthy life. The second tier relates to integration with society and the capacity to avail opportunities, to excel and to improve one's quality of live. Finally, the rights-based paradigm appreciates that underdevelopment is primarily due to political exclusion and so freedom from poverty and underdevelopment is primarily due to political exclusion, and so freedom from poverty and underdevelopment relies on being able to participate in policy-making. Thus the third tier relates to the underlying structure that can hinder consumer rights.

Source: Ali Qadir (2001) The State of Consumers in Pakistan; Josie Fernandez, 2004:6[14]

Marginalisation as political neglect

Political marginalisation of plantation workers has occurred in the following ways:

- Problems in obtaining citizenship certifications.
- Exclusion of political parties particularly opposition political parties in plantations by the management.
- Ineffective representation of concerns of plantation workers such as higher wages and better working conditions by the Malaysian Indian Congress (MIC), a member of the ruling coalition Barisan Nasional.
- Non–inclusion in national development plans.

Marginalisation through co-option of trade union leaders and alienation of the workforce

The plantation is not only an institution but also a social system. It is a social system where the daily lives of the community of labourers is totally institutionalised. Authority and control are vested in the plantation management. The plantation exists for the purpose of production. The attitudes, beliefs and ways of life of the entire community have been shaped by the manner in which plantations are organized.

"Authority and control are inherent in the plantation system…, the authority structure that characterises the pattern of economic organizations extends to social relationships. So, we find that the plantation community is one with an inherently rigid system of social stratification."[15]

Marginalisation of women

One of the primary reasons for the employment of women in plantations is because it helps plantation owners to keep overall wages low as women were paid lower than men. Ironically, women's working conditions became worse when the policy for equal pay for both men and women for similar jobs under the MAPA-NUPW collective wage agreement was implemented. Due to this policy, pregnant women had to do

ladder tapping. With the equal pay policy, the rights of nursing mothers to breastfeed their babies were denied. They were no longer permitted to go to the crèche during working hours.

Most of the women workers are involved in field work such as weeding and spraying and therefore are more exposed to occupational hazards.

Marginalisation of migrant workers

Plantations are known to employ undocumented migrant workers. In 2002, when the Malaysian government launched a major crackdown on "illegal" workers, work in the plantations, especially in Sabah came to a standstill. Undocumented workers cannot claim rights, for example non-payment of wages. They are subjected to easy cancellation of work permits if they ask for their rights to be respected and protected.

Labour

Cheap labour was required to clear vast tracts of forests to plant rubber (then) and turning it into products for the burgeoning industries in Europe and North America. Cheap labour was vital to keep operational cost to the minimum to ensure the highest possible returns for investors. The management principle to keep cost low is at the expense of the welfare of workers. The effectiveness of plantation management is judged by the costs of production.

In order to attract plantation capital, the British needed a plentiful supply of cheap labour. The plantation industry is labour intensive particularly at the development and productive phases. "Hundreds of coolies - Malays, Chinese and Indians - were available to do manual weeding," says a retired senior planter (interview Oct 2006).

The 'cheap colonial labour policy' was sustained through the importation of immigrant labour into Malaya. Immigrants were brought from the densely populated regions of Java, China and India. According to various studies on plantation labour, the Indians were preferred to Javanese and Chinese

Insert picture

Not Beyond fear

labour. It was easier for the British to bring in Indian labour which was cheaper than Javanese and Chinese labour. Two major labour recruitment systems were therefore introduced.

As India was then under British rule, there were no problems in sourcing labour from particularly South India. Readily available surplus labour and the geographical proximity to Malaya facilitated the movement of workers from India. Poverty played an important role for impoverished poor peasants to migrate to foreign lands for better livelihood.

The bulk of Indian workers was brought into Malaya by three main immigrant labour systems, namely the indentured labour system, the *kangany* labour system and the assisted immigrant labour system. Prior to these systems of labour recruitment, the movement of workers was through slave trade. As a result of growing popular revulsion against slavery in Britain, the slave trade was abolished in 1807. Western enterprises like the plantation industry needed a continuous supply of human beings. As such, new forms of slavery emerged.

Under the indentured labour system, immigrant workers were recruited through labour recruitment firms or agents. These agents advanced money to poor persons willing to work for the passage to Malaya. The intending migrant signed a contract for a period of three to five years. Under this contract system, the workers did not have the right to change their employers. Most of the recruits were between the ages of 15 and 45.

Trafficking in human beings was so lucrative that ship-owners and merchants mobilised poor Indian peasants to emigrate to the overseas labour market. Traffickers even resorted to kidnapping potential workers.

These new workers were utterly defenceless against the institutionalised abuse of the indenture system. At a Commission of Enquiry in 1890, K. Tambisamy, manager of Rawang Mines and contractor for South Indian labour, testified:

> I was sent to India in 1886 to recruit coolies for government, and from the experience then gained, I can

> confidently assert that not one single coolie who leaves India knows the real value of the rupee in this country, nor the cost of living here. The recruiters are scoundrels to a man; they not only make gross misrepresentations to the intending immigrants, but even employ force to bring them over. I have myself seen men dragged from the depot to the steamer by force in the presence of police officers who raised no remonstrance.[16]

My grandfather would relate stories of young boys disappearing from the streets and years later you would hear they are in an estate in Malaya", said Arjunan Ramasamy.[17]

To end the labour trafficking, the Indian government introduced legislation in 1872 to control labour movement. But the legislation failed to improve the slavery like conditions of indentured workers. Mobility of labour to this day is a factor in the exploitation of migrant workers who are subjected to low wages and hazardous working conditions.

Indian Slaves in South Africa

A little-known aspect of Indian-South African relations

Soon after Jan van Riebecck set up a Dutch settlement at the Cape of Good Hope in 1652, to supply provisions to Dutch ships plying to and from India and the East Indies, people from India were taken to the Cape and sold into slavery to do domestic work for the settlers, as well as the dirty and hard work on the farms.

A woman from Bengal named Mary was bought for van Riebecck in Batavia in 1653. Two years later, in 1655, van Riebecck purchased, from the Commander of a Dutch ship returning from Asia to Holland, a family from Bengal – Domingo and Angela and their three children. On May 21, 1656, the marriage was solemnized at the Cape between Jan Wouters, a white, and Catherine of Bengal who was liberated from

slavery. Later in the year Anton Muller was given permission to marry Domingo Elvingh, a woman from Bengal.

From then until late eighteenth century when the import of slaves from Asia was prohibited, many hundreds, if not thousands of persons from India – mainly Bengal, Coromandel Coast and Kerala – were taken to the Cape and sold into slavery.[18]

Employers took little interest in looking after the welfare of these coolies, but instead forced them to work as hard as possible and tried to keep them on the job as much as possible. At the end of the indentured period, they usually tried to renew the agreement for another period if the worker was still productive, or to get rid of him if he was not. Strict control and exploitation became basic ingredients of the employment system as observed by the Report on Work on Plantations by the Labour Department in 1910 as: '…fines and imprisonment could be imposed for disobedience: and desertion was punished by arrest and imprisonment and there was no repatriation at the end of the contract. In fact the labourer was a victim of the doctrine of personal responsibilities, able to enter into a contract and to sue and to be sued on the contract, if he was over the age of 15 years'.[19]

Mortality rates among plantation workers in Malaya were high as they lived and worked in deplorable conditions in the plantations. Disease and depression took toll on workers in their prime.

The indentured labour system was "a monstrous, rotten system, rooted upon slavery, grown in its state soil, emulating its worst abuses and only the more dangerous because it presented itself under false colours, whereas slavery had the brand of infamy written upon its forehead", wrote Beaumont an ex-chief justice of British Guiana. The indentured system was short-lived but 200 years later, its effects still haunt plantation workers.

The *kangany*-system of labour recruitment replaced the

indentured system after its abolishment early in the 20th century. Under the *kangany* system, a labourer who was already an employee in an estate was sent by the employer to recruit agricultural labourer from his village. The *kangany* system was preferred by the plantation enterprise for the following reasons: cost of recruiting was lower, government preferred this system, the workers were seen as free labour (not kidnapped/trafficked), the workers knew the recruiter. Many families migrated under this system and the British used the system to break the monopoly of Indian recruiter firms which restricted labour supply.

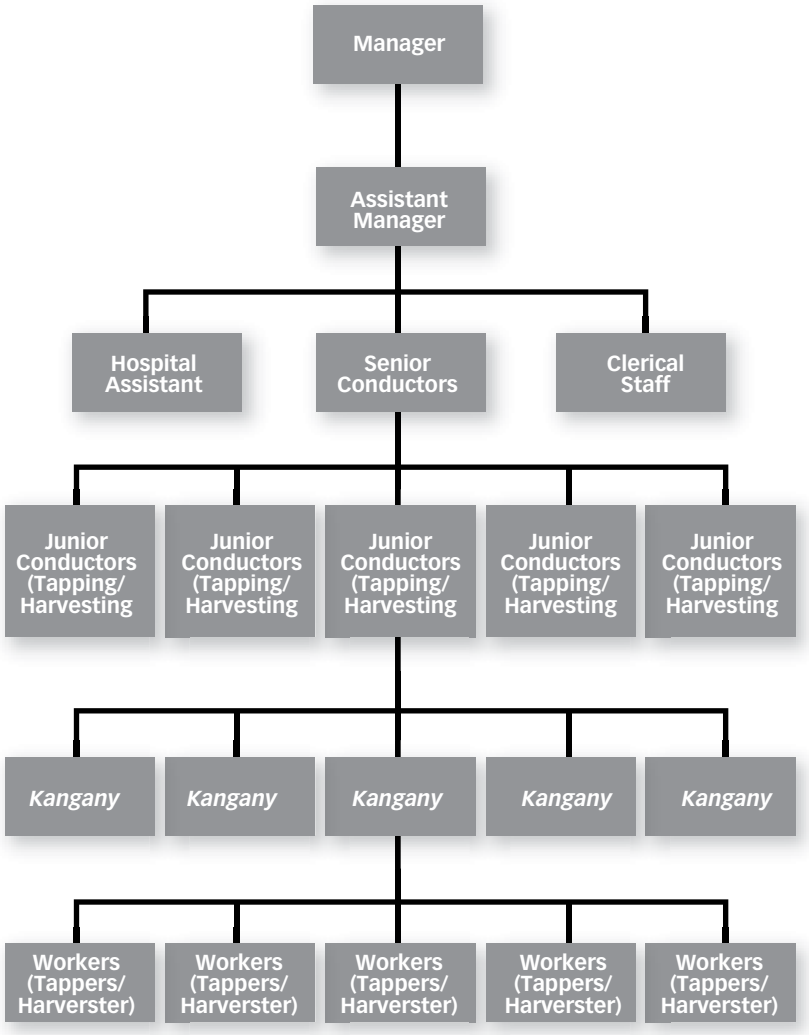
The *kangany* became an important and powerful intermediary between workers and the management, enjoying a position of power and influence. Many kanganies reaped economic benefits.

"We had to follow the orders of the *kangany* who supervised the spraying gang. Our request for gloves and better pumps for spraying were refused. We were not allowed to speak to the conductor or manager." said Nagama, a former pesticide sprayer.[20]

The *kangany* system was followed by an assisted immigration system. It is pertinent to note that the colonial government managed the supervision and administration of labour conditions. The various systems of labour recruitment were forms of contract that bound the workers and benefited the Western agribusiness enterprise. Indeed these forms of control have undermined the "resilience and resourcefulness of migrant labour".

It is these forms of working conditions and labour control that have facilitated the purveyors of pesticides and chemicals to promote their hazardous products like paraquat in plantations. The controls have denied plantation workers access to information on the health effects of hazardous pesticides. "Plantations are like gated communities. The security guard decides who is allowed to enter the plantations. We have been refused entry as we are recognized as activists," says Maneyvannan.[21]

Figure 2.3: **Organizational Structure of Rubber and Oil Palm Plantations.**



Source: Selvakumaran (1994:94)[22]

Wages

"You load sixteen tons, and what do you get?
another day older and deeper in debt
St. Peter, don't you call me, 'cause I can't go
I owe my soul to the company store"

Sixteen Tons by Merle Travis, 1947

The gross inadequacy of wages was the primary reason for labour unrest in the 1930s and 40s of the then Malaya. Low wage levels continue to keep plantation workers in a perpetual state of poverty. In the first few decades of the 20th century, one of the major struggles of plantation workers was the fight for better wages and working conditions.

In 1941, one of the basic demands of the Central Indian Association of Malaya (CIAM) was equal pay for both Indian and Chinese plantation workers. A leading Indian nationalist, Nathan, who was an editor of a Tamil daily, championed the cause of plantation workers in 1941. His basic demands then are still the demands of plantation workers today:

- Better wages
- Provision of better education facilities
- Elimination of sexual harassment of female workers
- Provision of adequate health and medical facilities
- Freedom of assembly for workers and freedom of speech
- Reduction of excessive working hours
- Assurance of non-victimisation of workers presenting petitions

His demands angered the United Planting Association of Malaya (UPAM), the most powerful employers group in the country. The police arrested Nathan on May 6, 1941. In response to this gross injustice, plantation workers from all over Malaya went on strike and staged demonstrations. The protests turned violent, with widespread arrests of workers and beatings; and police opened fire killing four workers and

injuring several others. The overwhelming measures taken by the British authorities cowed the plantation workers.

"The demands put forward by labour spring not from any ordered political doctrines but from a genuine feeling of distress. The workers qualified their strike demands with the reminder that 'the real wage we are demanding today is much less than the real wage we were given in 1939" – Michael Stenson[23]

The labour struggles of the 1930s and early 1940s had their roots in the quest for better wages and working conditions. During the Japanese Occupation, food scarcity contributed to the deaths of many children and adults from malnutrition. The entire labour force was destitute. After the war, the plantations which were neglected were revived by the British, but workers conditions were not improved.

The British maintained a policy of low wages. This was a deliberate post-war policy of Britain. Foreign exchange earnings from Malaya became crucial to Britain to finance post-war construction. It is tragic and unconscionable that a labour force that was undernourished, suffering ill-health, living in poor housing conditions was made to produce an output to build post-war Britain. In 1947, Malayan rubber earned US$200 million for Britain. Without the contribution of rubber and plantation labour, it was unlikely that Britain would have recovered economically.

In 1947, workers' wages were cut by 20 per cent on the instigation of UPAM due to a 20 per cent drop in the price of rubber. With no improvement in wages, more labour unrest grew. "The fight for a decent wage to meet minimum basic needs has been a protracted one," says Arjunan Ramasamy, a labour activist and community organizer.[24]

The National Union of Plantation Workers (NUPW) failed to achieve a wage structure that could meet the basic needs of workers.

The story of the struggle for minimum monthly wages is also the story of the struggle of plantation workers for better and safer working conditions. The cut-cost policies at every

level in the operations chain of plantations is one of the primary reasons why paraquat is used in plantations until today. Such policies have enabled the chemical corporations and plantation companies to maintain high profits.

Plantation workers had always experienced suffering and hardship due to inadequate facilities, poor financial remuneration, poor living conditions, and the psychological entrapment and social isolation of plantation life.[25]

> "Nevertheless before I close my address to you, I should like to emphasise that United Plantations is now in the course of developing 25,000 acres of new land at Ulu Bernam. We have now commenced the construction of what will be several hundred new houses, temples, water supply, comprehensive sports fields and facilities, etc. Unfortunately we also find that at a time when we need two thousand new employees, even some of our own workers believe the construction sites in Singapore or in KL offer better prospects. I believe that it will not serve anybody's long term interest to rush to such temporary places of work. Take note thousands of workers are now being dismissed from electronic factories, textile factories as well as building sites in Singapore as well as in Malaysia.
>
> We have seen cases of workers, who have been with our group for 20 years, throw away their seniority and thereby lose five thousand dollars which could have been paid in retirement benefits."
>
> Speech by B.Bek-Nielsen, Owner of United Plantations
> 14th July 1985

The late Bek-Nielsen, the Danish owner of United Plantations (UP) believes RM20,000 (US 5420) is the value of a worker's contribution to the profits of UP where those in senior management positions receive millions of ringgit in bonuses and benefits for the same period of 20 years. UP is one of the better run plantations in Malaysia but this is not reflected in the value it places on its workers. As long as this is how labour

is assessed, it is difficult to achieve justice for workers.

Many of the new houses built for workers in Ulu Bernam are not occupied. The younger workers have moved on to the urban centres. An ageing workforce and new temporary migrants have little bargaining power for negotiating better wages and working conditions.

WOMEN

Women as workers, wives, mothers and managers of the households are central to the life of the plantation industry. Without the participation of women in the many facets of plantation life, the plantation industry would not have flourished.

Changes to the Indian Emigration Act of 1928, saw an increase in the labour force in the plantations. For every three males, two females are allowed to emigrate.

In the late 19th century, women formed about 20-25 percent of the labour force in plantations. By 1947 women as plantation workers increased to 43 percent and in 1988 women formed 47 percent of the total labour force in plantations. Majority of the women, work in rubber and oil palm plantations. Women work as tappers, rubber processing workers in rubber estate factories, as carries for cutter-carrier teams in oil palm plantations, and as sprayers and weeders in rubber and oil palm plantations. Women are not employed as field conductors, and managerial staff. In rare circumstances, women may be engaged as *kangany* (sometimes referred to as a *mandore*) of spray gangs or weeders. The position of women in the plantation employment structure reflects a gender bias.

Plantations engaged women to ensure a steady supply of labour in the plantations particularly before the employment of the current foreign labour force. The employment of women provided a settled labour force in the plantations. Labour mobility within plantations was uncommon. The children of plantation workers remained in the estates until rapid

industrialization and urbanization in the 1980s/90s brought some changes to the settled labour patterns in the plantations. The employment of women and children was an element of labour control as the whole family could be employed in on estate. Until very recently plantation workers did not seek employment outside estates.

"My grandfather, father and I worked in the same estate – Ulu Bernam but my sons are factory workers in Shah Alam." Arjunan.[26]

"The kangany dissuaded my father from sending me to secondary school. He advised my father that it would be better for me to work in the estate to contribute to the family income", says Navamukandan, the current Executive Secretary of NUPW.[27]

Women were paid lower wages than men. Plantations were prepared to employ women to maintain the cost effective production system of plantations. Women gave up more but were paid less.

The poverty in plantations caused by low wages is the primary reason why women joined the labour force. Women contribute significantly to the household income. A study of plantation workers by Selvakumaran Ramachandran in the 1990s showed women were in more debt than men as they purchased all the household needs of their families. The men spent their income on themselves. However, the women are not viewed as breadwinners. Their income is seen as "supplementary" to men's incomes. The effect of this perception resulted in women being retrenched during periods of economic slow down or alternatively forced to take low paying jobs as pesticide sprayers. Women, therefore face more occupational hazards as they are mainly employed as sprayers and weeders.

Equal pay worsens the working conditions of women

Their working conditions arguably became worse when the policy of equal pay for both men and women for similar jobs under the MAPA-NUPW collective wage agreement was

implemented from 1976. Due to this policy, women are now expected to do similar tasks to men, for instance, ladder tapping, even when they are pregnant, which has caused miscarriages. With the equal pay policy, plantation employers have withdrawn many privileges given to nursing mothers. Before, women were allowed to visit their children at the crèche or to go about their household chores while waiting for the latex to drip. But now, this action could cause women tappers to be suspended from work by management. They were also expected to be at work until their work was finished, and to pass on maternal responsibilities to their older children or to child minders at the estate crèche. Thus, even though women's position has improved slightly in terms of wages, their condition has deteriorated in other ways.[28]

Women as pesticide sprayers

The exposure of women workers to paraquat is a dimension of the problem of paraquat's hazards that needs special attention for a number of important reasons. These are physiological as well as socio-cultural in nature. The problems women face as pesticide sprayers is the focus of the landmark Tenaganita/PAN AP study, "Poisoned and Silenced". The signs, symptoms and illnesses reported are to be expected from the known toxicological properties of paraquat. The preponderance of local skin and nail damage, gastrointestinal problems, eye irritation and respiratory difficulties are compatible with the known toxicological information available about the poison. The women workers were exposed to paraquat regularly in their jobs and spray the poison for seven hours at a time. Through their daily health monitoring, the workers have built a credible record of evidence of the signs and symptoms of poisoning experienced by them. The selected clinical examinations noted in the study also indicate some problems that are associated with known toxicological effects of paraquat. In addition, paraquat is a known toxic pesticide without an antidote. Based on this and other studies, it was concluded that paraquat should be banned especially because

of the conditions of use in the plantations. The workers spray the pesticide without understanding the problems they face with paraquat exposure. The survey shows that the workers were not given information on the pesticide being used nor provided any training on their use to reduce risks of exposure. Accidental spillage and splash of pesticides were not uncommon, spray equipment were found to be sometimes leaking.[29]

Another dimension of the women plantation workers situation is the burden placed on them by the roles that are prescribed to women in the tradition-bound societies that exist in the estates. The women's priorities as individuals are subjugated to the men's preferences as the decision-makers in the household and community in keeping with the strongly patriarchal system that is in place. Although social transformation is rapidly making strides even in the plantations, the girls still have to do the household chores while the boys would be free of the responsibility. It also means that the women are frequently subjected to abuse and neglect due to their powerlessness.

National Union of Plantation Workers

The National Union of Plantation Workers (NUPW) was formed in 1954 and has remained the sole trade union organization for plantation field workers in Peninsular Malaysia. Attempts to form alternative unions have been unsuccessful. The Registrar of Trade Unions rejected the possibility of other unions competing with NUPW for members.

The NUPW distanced itself from the more militant organizations such as the Pan Malayan Federation of Trade Unions (PMFTU). The British suppressed the post war militant trade unions through "a policy of repression, legislation and subversion".[30]

As part of its divide-and-rule policy, the colonial government deliberately sought to break the hold of the Chinese in the labour movement, the latter having strong links with the Communist Party. The then Trade Union Adviser, John

Brazier, cultivated English-educated, middle-class Indians with the intention of placing them in leadership positions in Indian-based plantation unions as a means of eventually gaining control.[31]

The overall objectives of the NUPW were no different from those of other trade unions in developing countries. The NUPW has been concerned with improving the working conditions and terms of its members, such as hours of work, rest days, paid holidays and employment security (NUPW, 1955: 1-4). With plantations classified as private property, the union has also been concerned with living conditions such as housing, medical facilities, schooling for the children of workers, electricity and water supply.[32]

> "…the NUPW stood above all for 'accommodations'. Its most important manifestation on the estate is the centralized control of the union and the absence of grassroots leadership."[33]

The NUPW's members were mainly Indians and the union was almost exclusively led by Indians who were not closely associated with the militant organizations.

From 1954 to the 1960s, the union membership grew significantly. The rapid unionization of plantation workers was not accompanied by greater participation at the grassroots level. Generations of promising labour leaders like Arjunan Ramasamy were slowly relieved of their position to pre-empt any challenges to the leadership.

Arjunan held various positions in the NUPW. He was a former branch secretary of the NUPW division in Ulu Bernam, chairman of the central committee for nine plantations and a member of the Executive Council from 1979 – 1989. He was among the grassroots leaders who worked to bring change to the NUPW. "But it was very difficult," says Arjunan, a genuine grassroots trade unionist. Arjunan pointed out that the effort to infiltrate and bring change to the NUPW was effectively frustrated through changes in the union's constitution. "The NUPW, which should have protected the rights of workers, exploited them. Look at the state of estate workers", he

says with tears in his eyes. "We are still paid low wages, do not have proper access to health care and the conditions in which pesticide sprayers work are deplorable. It was only in my 50s when I attended the talks organized by Tenaganita that I realized the risks of pesticides", says Arjunan, who is a community organizer and has traveled to Switzerland to speak at events organized by the Swiss NGO Berne Declaration during Syngenta's annual general meeting in 2003. He was promised overseas travel when he was a grassroots unionist but he turned them down to avoid being obligated.[34]

"…the urbanized Indian union bureaucracy became more divorced from the lives of their union members. Secure salaries, suburban homes, official cars, sponsored travel to overseas conferences, expense accounts and other prerequisites had gained for them a position not unlike the urban petite-bourgeois. Nevertheless, their essential role was clear. They were fostered by governments and employers because they facilitated orderly bargaining, minimized wildcat strikes…Their organisations were highly bureaucratic and centralized."[35]

"Of the 300,000 estates workers in Malaysia today, only 75,000 have remained members of the NUPW. Conditions have deteriorated in estates since 1960. As a result of this, plantation workers in Malaysia still exist in archaic conditions completely outside of the mainstream of modern wage labour."[36]

On the current state of the NUPW membership, Navakumundan says, "It's all going down everywhere. Scandinavian countries and Germany, such socialist and strong willed union bases…and we have to admit it…I've so many friends in international trade union movements…and I sit down and ask 'what's wrong?' And they say, look, perhaps something has happened that we were not really prepared for. I'm not talking about third world countries. I am talking about societies where the standard of education, level of literacy is almost 100%. So, overall, we're looking at a different kind of time zone now. And we cannot be rigid in our thinking. We should be asking ourselves, ok, think of the changing situation.

How does this institution play a relevant role? This is how we test our economic and social relevance in society."[37]

There has been no effective change in the NUPW leadership even after the former General Secretary was forced to step down due to poor health.

The hegemonic role which the NUPW has assumed would not have been possible without government patronage and close collaboration between the union leaders and management.

The NUPW leadership has moved away from its role in collective bargaining to assume a role as mediators and conciliators. The Code of Conduct for Industrial Harmony (a guidebook of dos and don'ts for employers and trade unions) was launched in 1975 mainly by the NUPW leadership and the Labour Ministry. By then, an accommodating government had changed the trade union laws to allow unions to venture into business, hoping that, as in neighbouring Singapore, a keen interest in maintaining the profits of their businesses would moderate union leadership.

Malaysia has witnessed the emergence of a 'labour aristocracy', particularly in the plantation sector, where the socio-economic gap between the mass of workers and the top members of the NUPW executive has been remarkable. This has been possible in the plantation sector, largely because of its relative isolation from other workers, coupled with the lack of competition from rival unions in the industry.[38]

"Where have the monthly fees of thousands of union members totaling millions of dollars gone?" asks Arjunan.[39] All that money could be utilised for the welfare of workers, their children's education and for better protection of pesticide sprayers.

The NUPW leadership went into one business venture after another. But these ventures failed. The union made desperate attempts to rescue the ailing businesses and failing companies. The affairs of the union became secondary.

Health Care in the Plantations

The plantation health care system is riddled with inequalities

and a far cry from the 1978 Alma Atta declaration of Health for All by 2000 and the Millennium Development Goals (MDGs) to be achieved by 2008. Five of the MDGS are related to health.

Migration was not accompanied by access to equitable health care. Historically, during the colonial period a basic health care system came into existence because of the high mortality rates due to malaria and unhygienic working conditions that led to high incidence of infectious diseases like cholera and dysentery. The ecological balance in the uplands of Malaya was disturbed when forests were cleared to plant rubber. The land clearing operations disturbed the ecologically sound drainage patterns creating conditions for the breeding of parasites such as the malaria carrying mosquito.

The migrant labour force lacked immunity due to poor nutrition and living conditions. Tuberculosis and beri beri, the diseases of the poor caused by the social conditions were highly prevalent.

Between 1860 and 1957, about four million Indians entered Malaya, of whom 2.8 million eventually returned to India; of the others, 1.2 million died during these years either through disease, snake bites, exhaustion, malnutrition and by other causes.

The plantation owners claimed that they arrived ill, but labour contractor Tambisamy, in his testimony to the Commission of Enquiry 1890, attributed their ill-health and high mortality to their low wages:

The men are in sufficient good health, as a rule, on first arrival, but deteriorate as time goes on…I am employing 700 men on contract work now at 35 cents, all Tamils…if the men in India knew exactly what they were coming to here under the existing conditions, they would prefer to remain there.

The decimation of the migrant population was so obvious that the matter was raised in 1890 by the acting civil surgeon of Nagapatanam who wrote to the head assistant collector there:

It is indeed very deplorable to go over the long list of deaths among Indian emigrants in the Straits Settlements during

the year 1889, and I consider that the excessive death rate is generally due to the unhealthiness of most of the estates and the climatic influence, the low rate of wages and the long term of the contract, or overwork. I had occasion to see some of the returned emigrants who sought admission into the municipal hospital during the last one year I have been in charge and found many of them suffering from chronic diarrhoea and dropsy.

On June 27, 1890, the acting colonial secretary of the Straits Settlements himself wrote to the British Residents of several districts:

> …the low rate of wages and the length of period of contract of the indentured worker and great stress upon the unfavourable effect on the mind, and consequently, upon the physical health of coolie-immigrants of the prospect of three years' enforced servitude upon wages fixed very much below the market rate of labour – a prospect that has to be faced by every newcomer, and which results, in many cases, in despair, loss of health, and death.

This is from an official who would not normally criticise his own administration. He has described the misery of labour as he saw it. Indentured workers earned 14 – 16 cents a day, in contrast to free workers whose wages were between 25 – 30 cents and, in addition, had to pay back the cost of their passage from Madras as well as advances made to them earlier. The acting colonial secretary continued:

> In their own country, most of these coolies eat fowl or goat meat once or twice a week, but they cannot afford to do this in the Native States (Federated Malay States) where provisions are much dearer than in the Colony (Straits Settlements) and immeasurably dearer than in India."[40]

The provision for health and medical facilities on the

plantations was made in the 1908 Labour Enactment and the Labour Codes of 1912, 1918 and 1923. These Labour Codes clearly stated that all employers were required to provide workers with the following facilities (FMS, 1938:9):

a) Adequate housing, proper sanitary facilities, and sanitary maintenance of houses and environment;
b) Control of communicable diseases;
c) Hospitals accommodation and equipment;
d) Medical attendance and treatment, including diet control in hospitals;
e) A sufficient supply of medicines of good quality; and
f) Nursery for infants and children

In practice, however, these regulations were not implemented in many plantations even though the provision of hospitals increased on estates in the Federated Malay States from 165 in 1921 to 168 hospitals in 1952. Nevertheless, these facilities were far from adequate for the sickly estate populations. In cases where hospitals were provided, they were usually not properly equipped and the staff was not well trained. This poor health situation was described by the Estate Commission of 1924): 'the health of the estate workers was poor and that, although there were a few exemplary properties, the modest health and medical facilities required of estate employers under existing law was not being provided and where provided was often inadequate.[41]

In 1933 the Labour Code was introduced to formalise existing legislation pertaining to health care in the plantations. But this did not improve the health of plantation workers. During the Japanese Occupation of Malaya (1942-1945) as the plantations ceased operations, workers were left to manage their health problems on their own. Whatever plantation health care existed suffered a set back again during the Emergency (1947-1950s).

Malaysianisation of plantations has not improved the health care system in plantations. Various studies on plantation health care indicate that the general health status of the

plantation population is low. These studies have assessed the health of plantation workers through:

> "The two main indicators, used were nutritional status and mortality (crude death rate, age specific mortality, infant mortality, early death – stillbirth, toddler mortality and spontaneous abortion). A review of these indicators clearly shows that plantation workers suffer from low health status, influenced by factors such as poverty, bad housing, living conditions and inadequate health services.[42]

Contemporary Health Care Delivery System in the Plantations

The contemporary health care delivery system is covered by the Labour Code administered by the Ministry of Human Resource. The Ministry of Health (MOH) plays an advisory role only. Employers are required to provide hospitals in the plantations. But as Nagama points out

"Access to treatment is a dispensary with a male dresser who seems to give out the same medicines for all complaints".[43]

It is a very telling statement. The dispensary or sometimes referred to as a clinic is manned by a paramedic referred to as dresser or medical assistant who actually practices medicine. Diagnosis is done by the dresser or medical assistant who gives medicines that may mask the symptoms of more serious diseases.

Every plantation is required to employ a Visiting Medical Officer (VMO). Many plantations do not comply. To have access to a VMO, the worker will need a referral from the medical assistant. Bureaucracy and the possible loss of wages are some of the reasons for plantation workers to delay seeing a medical officer even if one is available.

Pesticides sprayers interviewed for the Tenaganita / PAN AP study, *Poisoned and Silenced*, highlighted the difficulties in obtaining referrals for their medical complaints to doctors and

government hospitals. The first line of treatment for a worker who is ill is the plantation clinic. It plays an important role in providing primary health care. However, sometimes power and plantation politics often come into play here. The medical assistant is the decision maker on the issue of referrals. His decision is sometimes governed by the rules and guidelines set by the plantation management. These rules are based on costs and loss of man hours. The medical assistant will not be seen as effective in controlling health costs if he makes too many referrals to visiting doctors and government hospitals. Cost determines the number of workers who can seek treatment outside the estate clinic.

Many plantations now employ sprayers through a sub-contracting system, the most callous form of employment. In a sub-contracting system, plantation companies are known to abdicate their responsibility for the provision of health care and other benefits that a worker directly employed by a plantation enjoys. Sprayers engaged under the sub-contract system are seen as temporary workers. The sub-contractor often does not bear the cost of treatment of workers who are ill. Inequalities in the health care system have denied plantation workers such as pesticide sprayers immediate access to specialist treatment when accidental poisonings occur.

It is tragic and shocking that in the 21st century, 200 years after plantations were introduced into Malaysia, there are many serious inequalities in the distribution of health services and resources for plantation workers and their families. These people who matter in the economic map of Malaysia do not have easy access to doctors, dental surgeons, pharmacists, nutritionists, clinics, hospitals and facilities for emergency treatment.

The state of occupational health and safety in plantations is still in a dire state. According to a study undertaken by the Ministry of Health, the number of occupational accidents and occupational health problems in the plantation sector is one of the highest in comparison to other industrial sectors in Malaysia.[44]

The National Institute of Health and Safety (NIOSH) has criticised the health and safety conditions in plantations. It says most of the reported accidents and poisonings have occurred in plantations.

Union's perspective on plantation healthcare:

Navamukundan laments the declining quality of healthcare available to estate workers, in comparison to the colonial era: "The visiting medical officer, the local medical assistant in charge of the group hospital or even on the estate, there was always a resident estate hospital assistant. The numbers were there. This is the important thing. The numbers are not available now. Now the problem seems to be having a completely qualified medical assistant in the estate. They used to call them dressers, estate hospital assistants."

On the union's part, advocacy for basic health services for estate workers has been a long-standing issue. Unfortunately, the cause of essential healthcare for these workers has fallen between the cracks in the tug-of-war between plantation owners seeking to keep costs to the barest minimum possible, a government position that is bent on the avoidance of additional expenditure on a marginalised class of people, and a union that appears incapable of bending the will of these two power centres to accommodate the welfare of the constituency it is supposed to represent.

Navamukundan said: "I think the Ministry of Human Resources and the government have been completely negligent in the training of medical assistants. The union has voiced this many a time to the Ministry of Health. And the employers and union agreed that the government take over the entire hospital and medical care system but the government didn't want to touch it saying that it was a private sector investment and Tan Sri Abu Bakar, the former Director General of Health said that … "next the private companies would ask the government to take on the responsibility of industrial estates, and the government cannot afford this kind of money"

"But they picked up one point that is the training of the

estate hospital assistants to be done at the government medical assistants' centre. But the overall situation, if you talk about getting qualified persons into the estates to address the issues of the occupational health and safety of the workers, monitor them, especially with regards to pesticides, has deteriorated. It was there during the arsenite days."

Did the union protest against the government's neglect towards workers' health issues?

Navamukundan states in the interview that the union has met with ministers of health and other officials to highlight the deteriorating quality of health care in plantations.

"I have personally at meetings, raised the issue of safety, and I said, first of all, my premise is there's no such thing as a safe pesticide. So if you work with poisons as your regular occupation then you must be visible. And the only way to bring about transparency is to get the sprayers registered. Once you've got the sprayers registered, then subject them to the protocol of medical surveillance."

So the union's efforts appear to have ended somewhere after it has repeated its periodic calls for the authorities to demonstrate a deeper sense of responsibility to plantation workers. Its explanation might have carried a more telling ring of conviction if it had included clear evidence of a structured campaign to win for the workers this most basic of human rights.

On the plantation owners' part, their record of neglect of adequate health support services for the thousands of workers who are exposed to such severe occupational hazards daily must hang as a pendant of shame around their necks. In this context, those plantations that demonstrate their social responsibility towards their workforce – and there are a number that do – stand as an example of conscientiousness to their more apathetic members of their community. Nevertheless, as Navamukundan correctly points out, the erosion of health surveillance standards in the plantation sector from the colonial era until today is a stark irony that confronts the rapid development of Malaysia.

Sadly, the final recourse for these workers, the public healthcare system, has proven itself capable of betraying the noble principles of medical science. Till today it stands by, arms folded, while countless human beings expose themselves to deadly poisons daily in order to earn their daily wage. Their lives, for whatever reason, appear to be not valuable enough for the public service apparatus to protect from extreme harm.

THE WAVES OF CHANGE...

The Malaysianisation of the plantation industry came gradually in three waves. Britain, the colonial power had total domination of the plantation industry until the late 1940s. The pattern of ownership began to change in the second half of the 20th century. The sale of plantations in the late 1940s was a response to the state of Emergency declared in 1948, following communist insurrection. Several British planters were killed by the communist led revolt. Curfews were imposed as security was threatened by the insurrection. Foreign owners began to dispose off their plantations which were mainly bought by local businessmen.

The rise of nationalism and the growth of the independence movement saw a second wave of change in plantation ownership. On August 31 1957, colonial rule ended and Malaya joined the ranks of the newly independent nations in Asia. Foreign owners feared that changes in the political situation did not ensure a safe haven for their investments. Plantations were nationalized in Indonesia and Sri Lanka and this sent some signals particularly as plantation owners in these countries were not paid market prices for their plantations which were acquired by the nationalistic governments.

The Malaysian plantations, sold by foreigners were subdivided and sold to local businessmen as smaller estates and smallholdings of less than a hundred acres. This process of subdivision or fragmentation of plantations created massive

unemployment in the plantation sector and the already deplorable conditions of plantation workers deteriorated further.

"Between 1950 and 1967, about 324, 931 acres (131,551 hectares or 18 per cent of the total estate acreage) involving 28,363 employees was subdivided for sale to mainly Asian owners. The invariable consequence was drastic reductions in wages, health and other facilities, where workers were not thrown out of work altogether".[45] Under these conditions, plantation workers continued to remain in the fringes of Malaysian society.

In the 1970s, another wave transformed the ownership pattern of the plantation industry. The formulation and implementation of the New Economic Policy (NEP) in the 1970s saw the third wave of Malaysianisation of plantations.

The objectives of the NEP "contains two prongs, namely to eradicate poverty 'irrespective of race', and to 'restructure Malaysian society to reduce and eventually eliminate the identification of race with economic function".[46]

The political will to redistribute wealth through the acquisition of corporate assets accelerated the transfer of European ownership of plantation companies, agency houses and estates to Malaysian hands. Under foreign ownership, the profit made by the plantation companies were repatriated to foreign holders outside of Malaysia and were utilized to revive ailing subsidiaries outside of Malaysia.

The profits were not ploughed back into the Malaysian economy, this behaviour of foreign owned plantations and agency houses caused dissatisfaction among government officials and nationalists. The seeds for Malaysianisation of plantations soon sprouted. The Malaysianisation process was done through purchase of shares in plantations in the stock markets of London and Singapore, where many of the foreign companies were listed. Malaysia paid high market prices to purchase control of the plantation industry. In 1981, for example the Permodalan Nasional Berhad (PNB) took over Guthrie, a giant plantation company in Malaysia in a dawn raid for a whopping amount of RM932.8 million (*New Straits Times,*

18 September 1981). The large rubber and oil palm estates owned by Guthrie, Harrisons & Crossfield, Dunlops, Barlow Boustead came under the control of Malaysians and government-linked companies.

The change in the plantation ownership played an important role in the economic development of Malaysia and the advancement of Malays in the corporate sector. But did the transfer of ownership of plantations into Malaysian hands change the miserable conditions of plantation workers and small holders?

Broken Spirits

"We saw the estates being subdivided and subdivided. We knew of estate workers losing jobs and becoming homeless. Some even returned to India or kampungs in the case of Malay workers. My parents and their friends were worried. But when large estates were sold to Malaysians without subdividing, we were full of hope. As Malaysians, the new owners we believed could look after us. Some of us began to believe that we would have access to land ownership. Imagine with a small piece of land, we could have our own house, rear goats, grow vegetables without pesticides and still work in the estates. Nothing changed and sometimes the living and working conditions were worse. The wages remained low, the hierarchy remained, the estates were gated as before, health care system became worse. The Union was weak, it failed us. The NUPW tried to obtain land for the long serving workers but it lacked the political power. We remain landless. Our hopes for better lives under Malaysian ownership diminished and our spirits were broken", Arjunan.[47]

CHAPTER THREE

PARAQUAT: PROFITS, POWER AND PERILS

For the first time in the history of the world, every human being is now subjected to contact with dangerous chemicals, from the moment of conception until death. The public must decide whether it wishes to continue on the present road, and it can do so only when in full possession of the facts.

– Rachel Carson,
Silent Spring, 1962

FOURTY-FOUR years ago Rachel Carson rang the alarm bells on the dangers and risks surrounding the use of pesticides. Since Silent Spring was published, all evidence shows persistent use of agrochemicals in agriculture.

The use of pesticides increased tremendously worldwide from 500,000 tons in 1960 to around 3 million tons of

formulated (end-use) products in 1985.[1] Global pesticide sales were estimated to have reached USD 31.4 billion in 2005. Since 1990, however, sales of pesticides have generally stagnated in Western countries, while in Latin America and Asia, sales have grown rapidly[2]. Non-selective herbicides (paraquat and diquat together with glyphosate) accounted for one quarter of herbicide sales and 11% of crop protection sales of the main manufacturer (Syngenta) in 2003[3].

Paraquat sales in the top 46 markets were USD 396.2 million in 2001 (or in the latest year available in each country), and USD 314.9 million in the top 12 markets. An increasing percentage of sales is in developing countries. Syngenta is by far the largest paraquat producer, accounting for at least 50% of the market and probably a much higher per centage, even though paraquat no longer has patent protection[4].

Paraquat was first introduced in Malaysian rubber plantations in 1961.

Paraquat is a non-selective contact herbicide that destroys plant tissue by disrupting photosynthesis. It can also be translocated within the plant, resulting in residues.

Paraquat is used for controlling broadleaf weeds and grasses in more than 50 different crops, including plantations. Main crop uses are for maize, orchards, soybeans, vegetables and rice, but it is also extensively used in cotton and oil palm. It is used as a pre-harvest defoliant for crops such as cereals, cotton, hops, sugar cane, soy and sunflowers; and as a desiccant to speed up removal of spent plants.

Paraquat is also employed in no-till agriculture, killing grasses and weeds to minimise ploughing and help prevent soil erosion. It is used for weed control in non-agricultural areas (e.g. roadsides, drains, waterways). It has been employed for killing marijuana crops in the U.S. and in Mexico. As much as 70 per cent of the total production may be used in developing countries; Asia accounts for 45 per cent of use. There are also major markets in Central and South America.[5]

The agrochemical industry is a huge billion dollar (US) industry wielding enormous economic, political and social

Table 3.1 **Top 10 Pesticides Firms**

Company	Agrochemical Sales 2004 (USD Millions)	% Pesticide Market Share
1. Bayer (Germany)	6,120	17%
2. Syngenta (Switzerland)	6,030	17%
3. BASF (Germany)	4,141	12%
4. DOW (USA)	3,368	10%
5. Monsanto (USA)	3,180	9%
6. Dupont (USA)	2,211	6%
7. Koor (Israel)	1,358	4%
8. Sumitomo (Japan)	1,308	4%
9. Nufarm (Australia)	1,060	3%
10. Arysta (Japan)	790	2%

(ETC Group Comunique, Global Seed Industry Concentration – 2005, September/October 2005, as cited in PAN AP, 2005: 15)

power. The economic power of the agrochemical industry is a major factor in the increase in the use of pesticides in agriculture. As such the mounting evidence of human poisonings and environmental contamination is ignored or hidden by the producers of agricultural chemicals in order to increase and sustain profits. Their economic power enables them to exert influence on international standards setting bodies, national governments and local communities.

Buttressed by profits, marketing and advertising, corporations try to influence the political space. They promote their roles as important development actors and therefore seek political participation or use the politically influenced. The involvement of political parties in business for example in Malaysia is a phenomenon that raises questions on the contentious relationship between politics and business. Public private partnerships are another form of business and political relationship.

Two examples of the corporate influence in politics unveil important insights into the power of corporations.

In 1972, Salvador Allende, then President of Chile, provided the General Assembly of the United Nations with good reason

to question the role of TNCs:

> Two firms that are part of the central nucleus of the large transnational companies that sunk their claws into my country, the International Telegraph and Telephone Company (ITT) and the Kennecott Copper Corporation, tried to run our political life.
>
> Last July, the world learned with amazement of the different aspects of a new plan of action that ITT had presented to the US Government in order to overthrow my Government in a period of six months. They wanted to strangle us economically, carry out diplomatic sabotage, create panic among the population and cause social disorder so that when the Government lost control, the armed forces would be driven to eliminate the democratic regime and impose a dictatorship.
>
> Distinguished representatives, before the conscience of the World, I accuse ITT of trying to provoke a civil war in my country – the supreme state of disintegration for a country. This is what we call imperialist intervention.
>
> ITT's response was to launch a massive USD6.4 million advertising campaign in 1974 to improve its image. By 1975, as a result of this the number of people in the United States who believed that ITT cares about the general public' increased from 20 per cent to 43 per cent.
>
> Not surprisingly, TNC leaders attempted to play down the involvement of ITT in Chile's internal politics and to claim that TNCs have no political influence. Eric Gabus, a Nestlé manager, said:
>
> "In a well-organised democratic society, as are all the industrialised societies where MNCs are formed and exercise the bulk of their activities, the MNC has no direct political power. At most it is a partner in the political dialogue, although it is sometimes privileged by its economic responsibility."[6]

The press release below is another example of the political

influence of corporations motivated by profits, not democracy and respect for human rights.

Press release, 11 Jan 1997, Asia Pacific Environmental Exchange

"In late May 1997, the Danish newspaper *Politiken* exposed East Asiatic Company (EAC) and Zeneca's involvement in the selling of Paraquat to both Thailand and Burma. In interviews published on June 3-4, the director of EAC Denmark Mr. Fiorini admitted to *Politiken* that EAC cannot control the use of pesticides in remote rural districts. With the respect to the selling of Paraquat to Burma, Mr. Fiorini responded:

"We are convinced that Paraquat does more good than bad for the rural population of Thailand, and therefore it is also a good product for the farmers in Burma. It is wrong to boycott Burma. Through economic co-operation we can create the foundation for a middle class which can lead to political liberalization.

It makes no difference for the export of Paraquat whether the country is ruled by a military government or a democratic government. The important thing is whether the government can ensure appropriate education of the farmers for the correct management of pesticides."

Mr.Fiorini is obviously unaware of the fact that the SLORC cannot provide basic education in the country with schools and universities closed since December of last year, let alone allow education on health and safety for rural community.

It will not be the middle classes in Burma who will be exposed to Paraquat but local people who are ordered to use the pesticide by a military that implements their instructions through the barrel of a gun. The global community cannot allow the continuation of this investment with the Generals of Burma."

Corporations want free trade and free markets. Therefore

removing military governments, fighting terrorism, containing 'rogue states', opposing Islamic fundamentalism are used to justify new markets for pharmaceuticals, agrochemicals, weapons and other products.

When Sri Lanka attempted to rationalise its national drugs policy in the early 1970s, the country faced strong opposition from TNCs, particularly those that were American-based. One company, Pfizer, stalled negotiations over local production plans for four years until the Sri Lankan government, in frustration, suggested that it might nationalise the company. The Sri Lankan prime minister was then visited by the United States' ambassador who indicated that the supply of American food aid to Sri Lanka would be put in jeopardy by such action. Sri Lanka backed down.[7]

In Brazil, the West German embassy delivered a memo to the Brazilian government protesting inadequate price increases for drugs. It noted that German drug companies would have some difficulties with this and warned that Germany's cooperation in other areas in Brazil's industrialisation plans could be affected.[8]

Anthony Sampson, a writer and political reformist, documented the economic and political power of the TNCs in the oil industry:

"As the business became more global in the forties and fifties, so governments thought they were using their companies by encouraging them abroad, with antitrust clearances, tax advantages and diplomatic support, while the companies were in fact far better at using them, in ways that were often against government's interests."[9]

Many other similar examples that dot the world, demonstrate a basic underlying imperative of TNCs to encourage the development of political systems that are supportive of the free enterprise system.[10]

The market economy is woven into every fabric of daily life. According to a Business Week Survey, 72 per cent of Americans say business has too much power over their lives.[11]

Through aggressive and coercive advertising campaigns,

agrochemical companies create chemical dependent agriculture systems. Monoculture plantations and vegetable farmers are targets of such advertising efforts. It has been reported that chemical corporations spend an estimated USD one billion annually on advertising and marketing in Asia alone.[12]

Table 3.2: **Top 12 markets for paraquat**

Country	Sales USD000	Year	Confirmed % Syngenta sales
United States	56,866	2000	99
South Korea	44,308	2000	n.a
Brazil	34,586	2000	100
China	34,269	2000	96
Thailand	28,471	2001	64
Mexico	28,192	2000	85
Japan	24,768	2000	n.a.
Malaysia	20,944	2000	n.a.
Colombia	14,725	2000	n.a.
Spain	9,903	2001	3
India	9,419	2001	93
Guatemala	8,464	1999	n.a.
Total	314,915		

Source: The Perils of Paraquat, Dinham, 2003

The biggest growth areas in pesticide sales are in Asia and Latin America. The northern markets are generally static and require heavy investments in research. Older products are targeted towards the lucrative Asian markets. The FAO and WHO have warned that 30 per cent of pesticides marketed in developing countries do not meet internationally accepted standards and frequently contain hazardous substances and impurities that have been banned or severely restricted elsewhere.[13] Most of the top ten pesticide companies are located in Europe and USA. These countries have removed many of these hazardous pesticides from their own agricultural system because of the risks and harm to human health and the environment.

One such company is Syngenta based in Switzerland where its product paraquat has been banned since 1989.

From war chemicals to agrochemicals[14]

The history of chemical inputs in farming reveals a close relationship between military technology and the agrochemical industry.

World War 1: At the beginning of this war the allied blockade shut off the Germans' access to Chilean nitrate, used for explosives. So, using the previously known but not commercialised Haber-Bosch process for fixing nitrogen from the air, the Germans developed enormous production capacity and huge stockpiles of nitrates. When the market for explosives disappeared after the war these were diverted into nitrogenous fertilizers, and an agricultural input market was born.[15]

World War II: This war gave birth to the pesticide industry. DDT's insecticidal properties were discovered in 1939, and throughout the war the chemical was used to control the lice in Europe and mosquitoes in the Pacific that plagued soldiers.[16] After the war the huge production facilities found a ready market in agriculture and the era of poisoning began in earnest – even though the first environmental problems were recognized in 1944[17], bioaccumulation was noted in 1945, and human health effects by 1950.[18]

This war also gave a big push to the development of organophosphate insecticides. Bayer, amongst others, carried out research into alternatives to the use of poison gases, and came up with the phosphoric acid esters. After the war they turned their attention to agriculture, reasoning that what kills people should kill insects.[19] It is ironic that it has taken so long to convince governments that what kills insects also kills people. Many organophosphates are still widely used in agriculture throughout Asia, exacting a terrible human toll.

USA/Viet Nam War: this war is widely known for the inhumane actions of the United States in drenching the Vietnamese countryside in the defoliant Agent Orange, a mixture of two agricultural herbicides 2,4-D and 2,4, 5-T. What is not so well known is that these herbicides were developed during World War II. Shortly before the end of the war in the Pacific an American freighter was on its way to Manila with a load of herbicides of the 2,4-D and 2,4,5-T group. The intention was to starve the Japanese by destroying their crops through aerial spraying of the herbicides. "The Boat was ordered back before it arrived. Another group of Americans had dropped the atom bomb…".[20]

The Producers

The international headquarters of Syngenta, the main producer of paraquat, is in Switzerland. Its geographical history led to a listing on four stock exchanges: Switzerland, New York, London and Stockholm.[21]

In Europe, another 11 companies have requested registration of paraquat: Barclay Chemical (Ireland), BV Luxan (Netherlands), Calliope SA (France), Grower (Greece), Helm AG, Hamburg (Germany), Marubeni (UK), United Phosphorus (India), and four Spanish companies: Industrias Afrasa, Agrolac SA, Aporta SA – Barcelona, and Pilar Iberica SA.[22] Other basic producers in Argentina, Taiwan and the US make paraquat.[23]

The proliferation of producers does not give the full picture of the importance of the product to Syngenta, as the company is also an important producer of raw bipyridyl and may supply the technical product to other companies. It has production plants in Huddersfield UK, Bayport Texas, and 50% ownership of a plant in Japan. In April 2001 the long-planned USD85 million plant in Nantong, China, came on stream. The plant, a joint venture with Jiangshan Agrochemical and Chemical Co and Nantong Petrochemicals Corporation, has a capacity of 6000 tonnes and will supply China and other Asia Pacific countries. In March 2001, Syngenta announced the closure of its paraquat plant in India. Syngenta has a number of formulation plants for paraquat and minority interest in some of the other producers, for example in Malaysia.[24]

Ever bigger machines, entailing ever bigger concentrations of economic power and exerting ever greater violence against the environment, do not represent progress: they are a denial of wisdom. Wisdom demands a new orientation of science and technology towards the organic, the gentle, the non-violent, the elegant and beautiful.

Schumacher, E. F.; *Small Is Beautiful: Economics As If People Mattered*

Syngenta[25]

Syngenta is the world's second largest agrochemical corporation, with a share of approximately 20 per cent of the pesticide market. Its interests encompass a wide range of agrochemical products and seeds, particularly genetically engineered varieties. The last ten years have seen increasing concentration in the agrochemical industry, and Syngenta was formed when the Boards of the Swiss company Novartis and Swedish-British AstraZeneca decided to merge their agrochemical and seeds interests, setting up the first global, dedicated agribusiness company. In spite of what the company described as a 'difficult market' in 2001, sales totalled USD 6, 323 million.

Herbicides, or pesticides that kill weeds, make up the major share of the agrochemical market, with sales in 2000 reaching approximately USD 14 billion, about half the value of the world pesticide market. Syngenta has a 17 per cent share of the herbicide market, through its sales of both selective (designed to kill specific weeds) and non-selective herbicides that will kill most plants.

Herbicide sales form 38 per cent of the Syngenta business. The most important of its products is paraquat, a controversial non-selective herbicide, sold in over a hundred countries under the trade name Gramoxone. The company describes Gramoxone as the world's second largest selling agrochemical.

Although sales and profits of paraquat products in developing countries are not divulged by Syngenta, being considered "commercially sensitive" information, these markets are important for profits. In 2000, Syngenta reported that: "Market expansion due to the substitution of manual labour in Asia and increases in herbicide-tolerant crop plantings in the US market continued to drive sales of Gramoxone and Touchdown". Touchdown is the trade name for glyphosate-trimesium, developed by Zeneca to challenge the biggest selling herbicide worldwide, glyphosate, which is marketed as RoundUp by rival Monsanto.

Paraquat was first synthesised in 1882 but its herbicidal

properties were discovered only in 1955 by ICI (forerunner of Zeneca). It has a tarnished reputation because of its acute toxicity, lack of an antidote and ill-health associated with operators, particularly in the plantations of developing countries. The Syngenta Annual Reports do not say that Gramoxone contains paraquat. The company refers to Gramoxone's "unique combination of benefits". Syngenta further claims that Gramoxone is helping to improve crop yields, raise productivity and reduce the need for extensive manual labour. This is the herbicide, according to Syngenta, which first made possible the concepts of minimum tillage, conservation tillage and "no-till" farming... (Gramoxone) is approved by government regulatory bodies in over 100 countries. Growers use Gramoxone to protect and develop over 50 different crops across the world's major agricultural regions".

Conservation tillage and no-tillage are mostly due to the fact that fields are not ploughed and the top soil is permanently covered with organic plant material or mulch. A recent paper entitled *Is Paraquat Useful for the Environment* (October 2006) written by Lars Neumeister, states that the effect of paraquat is similar to mowing or slash weeding which leave the root structure intact. Paraquat is a herbicide that only kills plant parts containing chlorophyll on contact. The underground parts of the plant are not affected. The claim that paraquat contributes to conservation agriculture and no-tillage has not been substantiated in Syngenta's annual report for 2005.

Table 3.3: **Syngenta sales of pesticides & seeds (USD million)**

Pesticide sales by region	**2001 Sales**	**2000 Sales**	
Asia and the Pacific	951	1 039	
Latin America	677	850	
Europe, Africa and Middle East	1 870	1 991	
NAFTA countries (US, Canada, Mexico)	1 887	2 008	
Total pesticides	5 385	5 888	
Herbicide sales			
Selective herbicides (killing specific weeds)	1 722	1 841	
Non-selective (including paraquat)	687	760	
Herbicides as a per cent of sales	38%	38%	
Profits from pesticides and seeds	**Profits**	**Profits**	
Gross profit – pesticide	2 645	2 874	
Operating income – pesticides	738	866	
Gross profits – seeds	479	462	
Operating income – seeds	71	3	

Table 3.4: **Syngenta sales of crop protection and seeds (USD million)**

Seeds: Sales by region			
Asia and the Pacific	88	75	
Latin America	107	86	
Europe, Africa and Middle East	699	641	
NAFTA countries (US, Canada, Mexico)	903	437	
Crop Protection			
Selective herbicides	1,889	1,867	
Non-selective herbicides	688	645	
Fungicides	1,779	1,702	
Insecticides	1,100	1,049	
Professional Products	784	708	
Seeds			
Field Crops	1,181	648	
Vegetables and Flowers	616	591	
Profits from crop protection and seeds	**Profit**	**Profit**	
Gross profit – crop protection	6,307	6,030	
Operating income	1,125	1,030	
Gross profits – seeds	1,797	1,239	
Operating income – seeds	91	5	

Source: Syngenta Annual Report (2005).

COMPELLING EVIDENCE

This section on the health effects of paraquat is based on the peer–reviewed studies on paraquat complied by PAN AP, PAN UK and Berne Declaration. We have quoted extensively from the work of John Madeley in his report entitled *Paraquat, Syngenta's Controversial Herbicide* and Richard Isenring's report *Paraquat, Unacceptable Health Risks for Users.*

The section highlights the inappropriate conditions at work which expose workers to high risks of paraquat poisoning and the systemic and acute poisoning caused by paraquat. Selected examples of the problems of paraquat from around the world are included. Additionally, the section highlights the environmental concerns of paraquat.

Health Effects of Paraquat

Introduction

"The only highly toxic herbicide of the post-war years" is how the World Health Organization has described paraquat.

Paraquat is the most highly toxic herbicide to be marketed over the last 43 years. Yet it is the third most widely used herbicide in the world and in most countries where it is registered it can be used without restriction. Gramoxone, manufactured by Syngenta, is the most common trade name for paraquat but the herbicide is also sold under many different names by many different manufacturers. It is used on more than 50 crops in over 120 countries. Paraquat has been banned or restricted in 25 countries, mainly for health reasons. Malaysia banned paraquat in 2002. There has been a strong industry resistance to include paraquat in the Rotterdam Convention on Prior Informed Consent and it remains outside the PIC.[26]

Paraquat poisoning is a severe health problem in many countries. Highly toxic if ingested, one teaspoonful of

paraquat is fatal. Ingestion of very small amounts of the liquid concentrate can cause pulmonary oedema, cardiac failure, renal failure, liver failure and convulsions due to its effect on the central nervous system. Under these circumstances, death from multiple organ failure may follow within hours or days. There is no antidote.

There are two types of health effects resulting from exposure to pesticides: acute and chronic. Acute poisoning has generally been the most recognised form of effects. Chronic poisoning is long hidden from view but is currently gaining more attention. Pesticides, additionally may aggravate existing medical conditions, both acute and chronic, such as asthma and allergies, heart and immune system disorders. Meriel Watts of the Pesticide Action Network Aotearoa NZ, points out a very critical dimension in acute and chronic poisoning by pesticides. She says, "Acute effects are often confused with common illness, such as vomiting, headaches, respiratory problems, eye and skin irritation, and stomach troubles, and so links with pesticide exposure has been easy to discount. On the other hand, chronic effects are complex and difficult to link back to pesticide exposure and, especially, to prove. Hence chemical companies, government regulators, and other proponents of pesticide use have found it a simple matter to deny the suffering of millions of people caused by exposure to pesticides."[27]

Visible acute health effects may just be the tip of the iceberg, with a lifetime of chronic suffering hidden below the surface. For example, increasing rates of skin lesions on women workers in Central America give rise to concern that, although these women may not be acutely poisoned, they may suffer cancer or reproductive effects in the long term.[28]

Hazardous Exposure through Inadequate Working Conditions

The extensively peer-reviewed studies conclude that paraquat causes daily suffering to a large number of farmers and workers. Problems resulting from paraquat exposure are found around the world from the United States to Japan and from

Costa Rica to Malaysia. The injuries suffered are debilitating and sometimes fatal. The studies conclude that paraquat should be phased out immediately.

Inadequate working conditions – including insufficient protection of workers – occur on a large scale in many countries, both developing and developed. For most workers it is not possible to use sufficient personal protective equipment – this is not available, too expensive or uncomfortable in hot and humid climates. Even when used it does not always provide sufficient protection. The burden of responsibility cannot therefore be placed on workers, as there is compelling evidence of high risks to workers' health from paraquat exposures during everyday use.

Agriculture is one of the three most hazardous industries, (together with mining and construction). A large number of agricultural workers suffer pesticide poisoning, besides injury from accidentals, especially seasonal and migrant workers who increasingly have replaced year-round workers on plantations.[29]

In terms of occupational safety and health (OSH) "the impact of current up-to-date standards does not seem to level with the importance given to OSH in a human, national and global perspective".[30] Voluntary initiatives of the chemical industry were considered useful and well designed. But it is necessary to evaluate how effective they are in the context of national regulation, and to establish an adequate balance between regulatory systems and voluntary initiatives.

Routes of Exposure

The main route of exposure for agricultural workers is through the skin. A study of factors influencing skin exposure of workers (based on videotaped observation and tracing with fluorescent dye) found that following factors were associated with increased exposure[31]:

- Temperature;
- Using a hand-pressurised sprayer;

- Volume of sprayed diluted solution;
- Spraying with the nozzle directed in front;
- Splashing on the feet and gross contamination of hands

Overuse Compounds this Situation

A general problem in many countries is the overuse of pesticides. In the least developed countries, occupational health problems differ from those of industrialised countries as hazards at work are aggravated by diseases, poor sanitation and nutrition, illiteracy and general poverty. The studies show evidence that the use of paraquat under working conditions in most developing countries results in unacceptable risks to health.

Pesticide exposure is the major chemical hazard in developing countries because of the difficulty of applying protective measures. Agricultural workers often wear only partial protection. The compliance with safety regulations at the workplace varies considerably. In most developing countries there is disparity between legislation and the actual situation.

Climate and Conditions: Protection is Impossible

Reports from the Regions

Africa

Regulations for chemical safety were routinely ignored by plantation owners in Tanzania.[32] A conference on occupational health in Kenya, Tanzania and Uganda identified risk surveys in agriculture as being of "highest priority". It identified the need to assess the risks of herbicides to plantation workers, particularly for paraquat. [33]

A survey of spraying equipment in Cameroon where paraquat and glyphosate were the most commonly used herbicides, found that lever-operated knapsack sprayers predominated in two areas, while in a drier area it was mostly controlled droplet application (CDA) sprayers that were used.[34] CDA sprayers allow the use of a lower volume of spray solution, but the concentration is usually higher, resulting in

greater risk from leakage or spray drift. [35]

Leakages were reported by users of lever-operated knapsack sprayers, with faults occurring mainly at the nozzle (blockage) and trigger valve. Leakage increased as the sprayers aged. [36] The sprayers of most small-scale farmers were in poor condition and over 85% of these farmers did not use protective clothing. [37]

Soaked

In Kenya pesticide poisoning occurred despite use of personal protection. Protective equipment was either not used properly, it seems, or was soaked with pesticides during spraying, resulting in dermal exposure. Most clothing was made of cotton that soaked up pesticides. [38]

Health Costs

Costs of illness among smallholders growing cotton in Zimbabwe were seen to increase significantly due to pesticide-related illness.[39] Although health costs caused by pesticide use are high, farmers continue to use pesticides and become trapped in unsustainable practices. [40]

Fifty six per cent of small-scale cotton farmers in Zimbabwe reported pesticide-related health problems. Protective equipment did not present a panacea to health risks from pesticides as it was found that protective practices (e.g. wearing a coverall) explained only a small share of total variance of health effects.[41] The use of protective equipment was low, partly because the benefits of such equipment did not seem overwhelming, and it was connected with discomfort, cost and maintenance. [42]

Asia

Protection Inappropriate, Risks High

In a survey in Cambodia, 96% of farmers who were interviewed had experienced symptoms or signs of acute pesticide poisoning; 89% reported wearing a long-sleeved shirt and long pants during spraying, 11% wore shorts, 61% wore no protective mask (the cotton mask in use may have a limited

efficiency) and 72% wore no boots.[43] These figures indicate that partial protection does not stop acute poisoning.

Another survey in Cambodia reported that none of the ten farmers surveyed wore protective equipment and that the arms, back and feet of all ten farmers were soaked with pesticides after spraying. [44] A survey of 123 farmers in Thailand found that practically all wore a long-sleeved shirt and long pants, 48% wore a mask made of cloth, 17% of sponge mask and 35% wore no mask; 105 of these farmers used paraquat.[45] The signs and symptoms of poisoning that farmers reported were moderate in 63.4% of farmers (nausea, blurred vision, tremor, muscle cramps, chest pain or vomiting), mild in 34.1% (dry throat, dizziness, exhaustion, headache, shaky heart, itchy skin, weakness of muscles, skin rashes or sore throat), severe in 1.6% (convulsion or loss of consciousness), while only 0.8% of farmers had no symptoms.[46]

The distribution of risk among farmers and workers may differ between countries. In Southern India, studies on the hazards of pesticide use found that less than 20% of farmers and sprayers accounted for the total number of lost workdays. 24% of farmers in India reported some health problems due to pesticides. The health risk increased with working time, stage of cropping, incidence of leaks and low hygiene. [47]

In Malaysia, a survey of 72 female plantation workers found that two-thirds of them had been supplied with some protective equipment: 61.1% had received a respiratory mask, 44.4% gloves, 23.6% boots, 15.3% a cover for eyes and the face, 11% an overall, 1.4% an apron, while a third received no protective equipment. Few workers wore the mask as it was uncomfortable in the tropical heat. The workers experienced skin rashes, fatigue, blurred vision and headache. [48]

On 7 June, 1984, a letter from Klinik Nagara & Teoh Sdn. Bhd. (Malaysia) to the International Organization of Consumers Union (IOCU) states:
Further information on the death of Superamani A/P Krishnan who apparently died of weedicide poisoning in Ipoh on 14.4.84. Postmortem showed evidence of weedicides, i.e.:
1) 2,4-D
2) Pichloram and
3) Paraquat
There was also evidence of the weedicide on the shirts and trousers. The spray pump was leaking at one joint.
Signed Dr. S.K. Teoh

Access to post mortem reports of pesticide deaths like the case above are difficult to obtain. They are important evidence to support the phase out for paraquat and other hazardous pesticides used in agriculture.

In Indonesia it was found that farmers wore long (or knee-high) pants and a long-sleeved shirt in less than half of spray operations (42% and 37%, respectively). Discomfort in the hot climate and the high cost of adequate protective clothing were the reasons. But skin and clothes were considerably contaminated by pesticides solutions and the equipment was leaking in over half of the spray operations. [49]

Studies in Thailand on protective clothing for agricultural workers found that it was necessary to combine effective use of protective equipment with precautions for less hazardous handling and good personal hygiene.[50] But conditions in the field often do not allow this in many developing countries.

High Fatality

In China, pesticide poisoning caused about 4,000 deaths per year; an estimated 300 to 500 of these deaths were due to using pesticides in an "improper" manner, such as overuse and lack of protection.[51] Half of the poisoning cases were related to the

use of pesticides in agriculture. A study in China found that the knapsack sprayers in use were mostly of inferior quality and leakages occurred frequently.[52]

Latin America / Caribbean

Poisonings underreported

In Latin America and the Caribbean the risk of occupational injury or death was particularly high for workers in construction or mining, the informal sector and agriculture, while injuries and illness were seriously underreported.[53]

A study in Costa Rica estimated that 82.2% to 97.8% of all pesticide poisonings in Costa Rica were not reported. From 1996 to 2001 in Costa Rica, 4,465 fatal and nonfatal pesticide poisonings were registered. 40% of these cases were due to occupational exposure. Paraquat accounted for 35% of the poisonings, both fatal and nonfatal.[54]

In Nicaragua it was estimated that 25% of workers experienced pesticide poisoning each year and 48% during their life.[55] A survey of agricultural workers in Yucatan, Mexico, found that in one year 40% had sought health care due to illness from exposure to pesticides.[56] Many workers on banana plantations use acutely toxic pesticides – including paraquat – without having received appropriate instructions.[57]

Problems of faulty equipment, inappropriate clothing

In Brazil a survey of spraying equipment found that all sprayers in use for over two years presented failures: the nozzle was in bad condition in 80.5% of sprayers, 56.6% had leaks and 47% had a damaged hose.[58] Technical improvements in spraying equipment have so far not been transferred satisfactorily to field practice .[59]

The wearing of gloves or overalls by plantation workers in Costa Rica did not offer significant protection to wrist and legs. When an apron was worn, the exposure on the back was relatively low but not significantly reduced. Wearing trousers resulted in a significantly lower exposure of the legs. This

survey indicates that wearing gloves, overalls, aprons, and trousers does not necessarily result in adequate protection as the spray solution may get under the clothing or be soaked into it.[60]

In Costa Rica 58% of the application systems on plantations were found to be deficient regarding workers safety, resulting in increased rates of poisoning.[61] The quantities of paraquat used per hectare each year were similar on both small and large farms.[62]

A survey in Ecuador found that practices likely to increase pesticide exposure were mixing solution by hand or with a stick (36 out of 40 farms), leaking sprayers (28/40), absence of protective equipment other than rubber boots (38/40), pesticide storage in the farmhouse (19/40) and unsafe disposal of containers (35/40).[63]

USA

Most Powerful but Inadequate Conditions Prevail

In California 13% of farm workers had no access to water, while symptoms reported at work were eye irritation (23% of workers), headache (15%), blurred vision (12%), skin irritation (12%), dizziness (5%), numbness or tingling (6%), nausea/vomiting (2.5%), diarrhoea (2%) and dehydration (1.5%).[64] Workers re-entering sprayed fields may be highly exposed and even labour contractors often do not know what pesticide was sprayed.[65]

In the most powerful nation, inadequate working conditions prevail despite regulations on the responsibility of employers to be knowledgeable about safety requirements and for workers to be informed about hazards and measures for protection.[66] Among cases of illnesses in California due to paraquat, the majority (39.1%) occurred during handling of spray equipment (by clearing, due to malfunction such as leakage or splashes during loading); one third of illness was due to various factors including 12.4% environmental causes (e.g. change of wind, spray drift), 11% accidents and 7.1% accidental contact with paraquat during the spraying or handling.[67]

Higher Risks in Manual Spraying

The rate of paraquat-related illness cases associated with manual spraying was 18 times higher than with tractor-mounted sprayers. Other factors with a higher risk of illness were the crop type (e.g. fruit trees) and season – the higher illness rates in summer may arise from less protective clothing being worn, increased paraquat absorption, and different physiological response at higher temperatures.[68]

Unacceptable Risks, Phase out Paraquat

Risk from paraquat use is unacceptable as the use of pesticides is increasing both in larger and small-scale farming and the long-term exposure, even at low doses, can have chronic effects.

The extent of pesticide poisoning in developing countries is worrying as the studies show. There does not appear to be a viable solution in hot climates to control the occupational risks with protective equipment.

Risky Practices

Mixing, Spraying and Acute Poisoning

The greatest risk to workers of fatal and serious accidents is during mixing and loading where contact with concentrate occurs, but fatal accidents have also been described due to prolonged contact with the diluted paraquat spray during application. Conditions of use in many developing countries make it difficult to follow label instructions and recommendations.

"I could not continue, I was sick. The work makes one feel nauseous. I also had trouble with my sight and my fingernails fell out during my work, also my toenails" says a former banana plantation worker in Honduras.

During mixing and spraying of pesticides, 87-95% of overall exposure was seen to arise via

(INSERT PICTURE - no 7 Refilling_SprayTanks_Indo_ May_04.jpg)

A sprayer in Medan, Indonesia handling paraquat concentrate with his bare hands. Photo taken in 2004.

the skin, while inhalation accounted for 5-13% of exposure, and manual sprayers clearly caused the greatest exposure with a mean rate of 1.040 mg/h.

Studies on banana plantations found that poor working conditions mean workers are continually at risk of high levels of exposure that could lead to severe acute poisoning.[69] During the handling of paraquat concentrate, different parts of the body may be contaminated, and there is evidently a risk of skin exposure .[70]

Granular formulations of paraquat contain 5% paraquat (or diquat and paraquat combined).[71] The per centage of paraquat absorbed through intact human skin (arm, leg or hand) is estimated to be 0.23-0.29%.[72] But skin is more vulnerable when it has been injured or is damaged through contact with paraquat.[73] In certain areas of the body, skin is highly permeable, e.g. in the genital area exposure can result in a 50 times greater absorption.[74] It was found that sweat on skin from perspiration led to increased skin absorption.[75] Absorption via the skin is also higher in workers who have dermatosis.[76]

Application Technology

Risks of Backpack Sprayers

Exposure is greater when knapsack sprayers are used rather than tractor-mounted sprayers.[77]

More recent studies confirm that exposure is increased with hand-pressurised backpack sprayers and that use of this type of sprayer determined the skin exposure, partly by influencing working practices (spray nozzle held in front of the worker at a short distance or unblocking of nozzle when soil got into it)[78]. Skin exposure arises from direct contact with solutions or contaminated surfaces and from airborne spray droplets on skin.[79]

Leaking sprayers and careless handling may have fatal consequences if paraquat is applied without adequate protective clothing. Sprayers must therefore be leak-proof

(tank and lever), contaminated clothing must be removed immediately, and skin that is contaminated must be washed. While these seem common sense measures, they can be overlooked due to poor maintenance of equipment, lack of sanitary facilities in the field, ignorance of workers about the health risks or because of heavy workloads. But the burden of responsibility must not be placed on the worker. Care and responsibility for the conditions in which paraquat and other pesticides are used rest upon the producer , the government who permits the use and the management who decide to use it .

Paraquat Spray Droplets Endanger Health

Most of the paraquat spray droplets which are inhaled are retained in the nose where they irritate mucous tissue, often causing nosebleed; paraquat deposited in the nose may be swallowed and contribute to internal dose.[80] Inhalation of spray often occurs in windy weather and when face masks are not worn, and usually this leads to a sore throat or nosebleed.[81] When a sufficiently high amount of spray is absorbed, e.g. through the mouth, systemic poisoning may occur. In Canada it is recommended not to apply paraquat when it may drift to inhabited areas – neither during periods of dead calm nor in surging winds.[82] In Malaysia, pesticide sprayers in plantations continue to spray during strong winds (interview with pesticide sprayers, 2006).

Health and Environmental Consequences of Drift

Paraquat drift from spraying has also caused health and environmental problems. For example, a diluted paraquat mixture was applied in April 1991 to two fields near Hollister, California. "Drift from these applications passed directly over the community residences and associated complex which included gasoline service stations, restaurants, a recreational narrow-gauge railway, and an outdoor barbecue pavilion and eating area". Following complaints by residents, a survey was undertaken to determine if any health consequences resulted

from the drift. The survey found an increase in coughs, eye problems, diarrhoea, irritation, headache, nausea, rhinitis, throat infections, breathing problems, unusual tiredness and wheezing. "If swallowed, burning of the mouth and throat often occurs, followed by gastrointestinal tract irritation, resulting in abdominal pain, loss of appetite, nausea, vomiting and diarrhoea. Effects due to high acute exposure to paraquat may include excitability and lung congestion, which in some cases lead to convulsions, incoordination, and death by respiratory failure. Other toxic effects include thirst, shortness of breath, rapid heart rate, kidney failure, lung sores and liver injury". Respiratory adult distress syndrome due to lung fibrosis is usually the cause of death. Reduced lung capacity is also reported in a case study in South Africa.

Protective Clothing?

Exposure of agricultural workers during spraying presents considerable acute and chronic risks to health, which could ideally be reduced to a certain extent by good practices and use of adequate protective clothing. But this often not affordable, is not available, or is totally inappropriate for use in hot and humid climates.

Penetration of clothing by paraquat was tested for different types of fabric. It was found that shirting or lightweight fabrics provided the least protection, while heavier-weight fabrics (denim and twill) offered significantly greater protection. Normal work clothing did not give sufficient protection from heavier spray or a spill.[83] It was found that shirt became wet and clung to the skin, which is resulted in significantly greater exposure than with double-layer cotton coveralls. Considerable exposure also occurred through openings at the neck and sleeves.[84]

Numerous studies cited here show evidence that acutely toxic pesticides cannot be applied safely by unprotected workers using hand-held sprayers. Such conditions are normal in developing countries. In many of these countries adequate personal protection is not affordable and is also uncomfortable

to wear in hot weather. Appropriate gear to cope with a hot and humid climate is not available.

It is clear from these studies that the health of agricultural workers may be impaired by the long-term use of pesticides including paraquat. Skin diseases occur frequently that increase the risk of absorption of paraquat through contaminated skin. Working situations with a potential for high exposure are continually present. Taken together, these factors present a high-risk for workers. The legislation on occupational health and safety in many countries often does not address the risks of pesticides or is not implemented. The standards for occupational health and safety in agriculture are not detailed or implemented in many countries. Education in improved practices of using pesticides could only be provided to a small fraction of the users. Efforts made by the industry for promoting less hazardous practices of pesticides use have had limited impact.

Health Effects[85]

A paper published in 2001 analysed the health effects of paraquat in developing countries, drawing on research published in a large number of peer-reviewed journals. The studies showed that dermal exposure was the most likely route of uptake. While paraquat is poorly absorbed through intact skin, penetration is increased by damage to the skin. Scratches and broken skin are common in physical agricultural work, and paraquat itself is a skin irritant. Inhalation is not considered a high risk, but could not be excluded under some application methods. Accidental oral exposure can occur through splashes in the mouth during mixing, eating with contaminated hands, blowing or sucking blocked spray nozzles, or eating contaminated food. It may occur from swallowing 'run off' on the face caused by droplets in spray mist. Among the effects documented were:

- skin problems ranging from mild irritation, burns, ulceration, peeling, necrosis (cell death in skin tissue), dermatitis of the hand and blistering on hands, thighs, legs, back and scrotum.
- eye injuries including blepharitis (eyelid inflammation), conjunctivitis, ulceration or keratosis (growth like a wart) of the cornea
- severe exposure on hands can lead to nail damage, ranging from localised discolouration to temporary nail loss
- nosebleeds resulting from local irritation of the upper respiratory tract, burning sensation in the nose
- systemic paraquat poisoning is characterized by burns of the upper digestives tract; and multi-organ failure, including the lungs, liver, and kidneys and less frequently the central nervous system, heart, suprarenal glands and muscles. In fatal cases death is due to respiratory failure from pulmonary oedema or pulmonary fibrosis up to over a month after the event. While fatalities are generally suicide cases, one study identified 15 unintentional fatal poisonings, including five due to contact with diluted spray solution
- some chronic effects have been identified: a weak association with developmental and reproductive effects, and a link to Parkinson's disease.

Toxicology

According to the US EPA manual on Recognition and Management of Pesticide Poisoning (1999),[86] paraquat when ingested has life threatening effects on the gastrointestinal tract, kidney, liver, heart and other organs. The lung is the primary target organ of paraquat and pulmonary effects represent the most lethal and least treatable manifestation of toxicity. However, toxicity from inhalation is rare. The primary mechanism is through the generation of free radicals with oxidative damage to lung tissue. While acute pulmonary oedema and early lung damage may occur within a few hours of acute exposures, the delayed toxic damage of pulmonary fibrosis, the usual cause of death, most commonly occurs 7 – 14 days after ingestion.

Local skin damage includes contact dermatitis. Prolonged contact will produce erythema, blistering, abrasion and ulceration and fingernail changes. Although absorption across intact skin is low, abraded or eroded skin allows efficient absorption. Toxicity to the gastrointestinal tract is manifested through swelling, oedema and painful ulceration of the mouth, pharynx, oesophagus, stomach and intestine.

Acute Systemic Poisoning

- The exposure of farmers and agricultural workers to paraquat, during mixing and spraying, has acute (immediate) toxic effects and chronic (long-term) effects on health. Acute health effects occur frequently among paraquat users. They include eye injury, nosebleed, irritation and burns of skin or other parts of the body. In case of acute paraquat poisoning, difficulty in breathing may develop with a delay of two to three days; death can occur up to several weeks after absorption.[87]

- 'Systemic' poisoning denotes an incident of exposure to a toxic substance that is followed by symptoms due to absorption by the system and ensuing damage of organs. The term 'poisoning' includes incidents of exposure that

lead to skin or eye damage, irritate the upper airway and cause nosebleed, and to exposures that result in the systemic absorption of the toxic agent – referred to more specifically as 'acute (systemic) poisoning'.[88]

- Different circumstances connected to poisonings are[89]:

  - Accidental: unintentional inhalations, ingestion or skin absorption of substance (spray solution during spraying or spills of concentrate during mixing).
  - Occupational poisoning: unintentional poisoning in a workplace setting.
  - Intentional poisoning: deliberate intake of substance (suicide) or homicide.

- When paraquat is absorbed through the skin it can lead to systemic poisoning with the same features as those resulting from ingestion. Prolonged contact with paraquat (from leaking equipment or soaked clothing damages the skin and greatly enhances absorption.[90]

- The European Commission has rated the acute hazards of paraquat as follows[91]:

  - Very toxic, by inhalation
  - Toxic, in contact with skin and if swallowed.
  - Danger of serious damage to health by prolonged exposure if swallowed.
  - Irritant to the eyes, respiratory system and skin

Paraquat poisoning should be treated as an emergency at a hospital even if the victim shows no symptoms of poisoning.

A pesticide sprayer from an oil palm plantation in Perak state, Malaysia who suffered blurred vision and skin problems after being doused in paraquat solution in an occupational accident. Photo taken in 2005.

(INSERT PICTURE – Picture No.1)

Reports from around the regions on skin, eye damage and systemic poisoning

Effects on Skin and Eye

- Paraquat acts as a strong irritant, especially in concentrated formulations. Contact with skin causes redness, blistering or ulceration and can lead to dermatitis. Diluted paraquat can cause irritation after prolonged exposure through soaked clothes.[92]

- When skin is intact, the absorption of paraquat is generally low. But it is greatly enhanced when skin is damaged. Prolonged contact with paraquat solution may itself damage the skin and allow increased absorption, leading potentially to severe poisoning. [93]

- When skin is covered and is in contact with paraquat solution, or when it is applied repeatedly, this causes irritation that is likely to increase permeability of skin.[94]

- Eye contact with paraquat solution may lead to an inflammation of the cornea. Treatment usually results in recovery after prolonged healing but it is not always complete and vision can be impaired if patients wait too long.[95] Other consequences of eye contact are potentially conjunctivitis, an irritant inflammation of conjunctivae and long lasting or permanent opacity of the cornea. Skin or eyes that have been contaminated with paraquat solution urgently need to be rinsed, preferable under running water and medical attention should be sought immediately.

Asia

- In Malaysia (in 1997-1998) paraquat caused a greater proportion (19%) of occupational poisonings than

organophosphates (16%). In 1987 paraquat was the causal agent in 62% of 225 cases. 71% of 249 pesticide poisoning cases in 1988 were also caused by paraquat.[96]

- In Sri Lanka a larger proportion of 85 male sprayers (23.6%) had more skin damages than unexposed factory workers (11.8%) or general workers (15.2%). Incidence of eye damage was similar in male sprayers.[97]

- These effects were reported by male sprayers and general workers but not reported by factory workers. Nosebleeds occurred in three male sprayers and one factory worker but not among general workers. In the latter study the concentration of paraquat was very low (0.04-0.07%) and the workers practised excellent personal hygiene (washing frequently throughout the day); this explained the lower incidence of damage to skin and nails than reported in other studies.[98]

- In these studies in Sri Lanka and Malaysia, symptoms of acute systemic poisoning may not have been observed. But they show the occurrence of severe irritating effects, leading to skin damage that is likely to increase the risk of paraquat absorption significantly. Localised irritant effects to skin and mucous membranes, nosebleed, cough, headache or nail damage resulting from paraquat – all indicate overexposure. These effects should be enough to remove a worker from the area to prevent further overexposure.[99]

Latin America

Bananas and paraquat

- The use of pesticides is high in Costa Rica because of banana cultivation. In 2003, about 175,000 workers were found to be exposed to paraquat and diquat.[100] In 2001, in 127 cases out of 544 notified pesticide poisonings, the

most identified causal agent was paraquat. These break down into 57 suicides, 29 accidents at the workplace, 17 occupational exposure and 24 unknown.[101] Reporting by the national surveillance system was incomplete; a study in four Costa Rican districts estimated that between 82.2% and 97.8% of pesticide poisonings were not registered. When these cases were included the proportion of poisonings in an occupational setting was 76.8%.[102] In the banana-growing area most injuries occurred among herbicide sprayers .[103]

- A survey of 96 families in 1998 in a rural area of Honduras found that 80% used pesticides and paraquat was the most often used. Very little attention was placed on safety measures. All the workers who used paraquat had at least one symptom potentially related to paraquat exposure.

Common Cause

- In Costa Rica (1996) occupational exposure accounted for 38.5% of 1,274 pesticide poisonings registered at the national poison control centre, followed by accidental exposure (33.8%) and suicidal ingestion (22.5%). Organophosphates, carbamates and paraquat accounted for 46% of cases, with paraquat the individual agent responsible for the highest percentage of cases (11.6%).[104] Paraquat was the most identified pesticide causing severe poisonings, hospitalisation or fatalities.[105]

- A survey of 96 families in 1998 in a rural area of Honduras found over 80 per cent used pesticides and paraquat was used most often. Safety measures were rare. All workers who used paraquat had at least one symptom potentially related to paraquat exposure, and prevalence of health problems among children was abnormally high compared with national rates.[106]

United States

Poisonings: Most powerful nation not spared

- Between 1971 and 1985 in California 231 cases of illness due to paraquat were reported; the majority of cases (38.5%) associated with paraquat were systemic (with symptoms of acute poisoning and respiratory symptoms). Eye and skin illness occurred in 32% and 26% of cases, respectively, and local respiratory symptoms accounted for 3.5% of cases; 55 of the 231 cases were associated with loss of workdays and 11 cases were hospitalized.[107]

- In California, between 1998 and 2000, 15 agricultural poisonings caused by paraquat were reported. Ten of these cases were rated as definite or probable (1 with systemic and respiratory effects, 4 with eye effects, 5 with skin effects), five were rated as possible. In 2001 there were 4 poisonings reported due to paraquat, 2 cases with systemic /respiratory effects (both definite/probable) and 2 cases with localised (topical) effects (involving only eyes and/or skin, one definite/probable and one possible case). Three poisonings due to paraquat were reported in 2002 with topical effects (two definite/probable cases and one possible) and in 2003, 4 poisoning were reported, 3 with systemic/respiratory effects (two definite/probable, one possible) and one definite/probable case with topical effects.[108]

European Union Poisonings

Europe

- In Italy, paraquat was among six pesticides most frequently associated with non-fatal poisonings referred to the main poison centre in 2000-2001 – 46 poisonings out of 872 were due to paraquat.[109]

- In Crete (Greece) pesticide poisonings increased during

1991-2001 to 1700 cases (fatal and non-fatal) per year, with organosphates and paraquat causing concern; 45% of the cases were accidental, 40% occupational and 12% suicidal.[110] One worker was acutely poisoned by paraquat absorbed through the skin during spraying. Another developed fibrosis of the lungs due to paraquat poisonings by absorption via skin; he survived with residual lung fibrosis.[111]

- Among 274 fruit growers in Scandinavia, where paraquat was the second-most used pesticide, 41% developed coughs with expectoration, 37% headaches, 30% nose discharge, 25% languor (weariness), 25% general malaise, and 21% breathlessness. Also noted were various symptoms such as dizziness, palpitations, nausea, skin complaints or itching of the skin or eyes. A protective mask was used by 39% of the growers.[112] Among a subgroup of 181 fruit growers who were examined medically, those who used paraquat (62.4%) had lung symptoms more frequently (not statistically significant): coughing and breathlessness. It was concluded that the professional use of biocides can give rise to lung disease comprising pneumonia and chronic progressive lung fibrosis.[113]

- In the UK between 1981 and 1986 paraquat accounted for 26 admissions to the poison treatment centre in Edinburgh; two of these occurred as a consequence of occupational exposure (leaking back canister; inhalation during spraying) and one case was due to accidental ingestion (removal of the bottle top with teeth). [114]

The symptoms cited in the reports above are an indication that work practices should be reviewed. They explain the critical need for strict personal hygiene and rigorous adherence to required handling procedures. However, in many countries this may represent an ideal guideline that only a minority of workers is able to follow, as it is not feasible due to inadequate

conditions in the field or the hot climate as in the plantations in Malaysia.[115]

Paraquat blinds Rajam, a plantation sprayer

On 1st April 1998, at about 10:30 am, Rajam was spraying Gramoxone (paraquat) when she slipped and fell. It had rained the previous night, the ground was wet and slippery. The impact of the fall caused the nozzle of the pump to spray the pesticide directly into her eyes. She was drenched with Gramoxone and immediately felt an intense burning sensation on her face, lips and eyes. Unfortunately there was no water for her to wash her face. She then decided to walk to the plantation clinic which was seven kilometres from the area she was spraying. By the time she reached the clinic, her eyes were red and swollen. The medical assistant arrived at 1pm. He washed her eyes and sent her to the government clinic close to the plantation. The doctor who examined Rajam at this clinic washed her eyes and referred her to the Government Hospital at Teluk Intan, Perak. At the hospital, a doctor checked her eyes and confirmed there were residues of Gramoxone. The hospital treated her and gave her a week's medical leave to rest at home.

Two days later Rajam was in severe pain and the eyes continued to tear. Rajam sought and received treatment at the plantation clinic again. A week after the accident, she was at the Teluk Intan hospital for the follow up appointment. Seeing the condition of her eyes had deteriorated, the hospital admitted her as a stay-in patient. The eyes were cleaned daily. She was discharged from the hospital after several days.

There was little respite for Rajam. She suffered pain, tearing and blurred vision for two years. During the two years she made 27 visits to the plantation clinic and the Teluk Intan Hospital for treatment. Did the Teluk Intan

hospital arrange for an opthalmologist to examine her?

On March 22, 2000, at her request, Rajam was referred to the University Hospital in Kuala Lumpur. She was to spend a month at the hospital where her worst fears were confirmed. She had lost her sight in her left eye.

Rajam is 38 years old. She has worked for 18 years in the plantation, nine years as a sprayer.

She stills feels pain, burning sensation and experiences excessive tearing in her right eye. She has blurred vision in the right eye and she now wears glasses. After the incident, she also experienced severe head, back and throat pain.

She did not receive any compensation from the employer although she had worked as a pesticide sprayer. She has received RM 6000 (approximately USD 1600) from the Malaysian Social Security Organisation (SOCSO) scheme for the permanent loss of vision in one eye. She receives RM 85 per month (approximately USD 23) from the SOCSO. She continues to work in the plantation applying fertilizers for a monthly wage of RM 150 (approximately USD 40). This is much lower than the RM 400 per month (approximately USD 108) which she earned monthly as a pesticide sprayer. Rajam is married with four children. *(Case study from Tenaganita, 2006).*

Effects on the Nerve System

- Evidence from animal studies supported by clinical and pathological scrutiny of human poisonings suggests that paraquat is neurotoxic.[116] At high doses, paraquat has produced neurological disturbances in rats, including decrease motor activity, lack of coordination, ataxia and dragging of the hind limbs (IPCS 1984). Another study has shown that oral intake of paraquat by mice resulted in long lasting reduction in catecholamines in the mid-brain, indicating neurotoxicity.[117]

- Paraquat was found to inhibit the activity of certain enzymes in blood serum.[118] In tests with fish, paraquat inhibited cholinesterase, (an enzyme needed for the proper functioning of the nervous system).[119] In another study with fish, cholinesterase inhibition was not observed at sub-lethal concentrations.[120] In earlier studies, paraquat had been seen to have an inhibitory effect on cholinesterase.[121]

- Pesticides that inhabit the enzyme cholinesterase act as nerve poisons. Symptoms include tremors and nausea. Paralysis or death can occur at higher doses. The inhibition by organophosphates and the neurotoxic effect are stronger than that caused by carbamates.[122] Paraquat presents a chronic health risk to workers due to its neurotoxic properties.[123]

Neurological effects (brain) and risk of Parkinson's disease

A number of studies have drawn strong links between paraquat exposure and the development of Parkinson's disease, the degenerative neurological condition.

- There is growing evidence that paraquat has chronic effects on the brain. In Taiwan, among farmers who had used paraquat, the risk for Parkinson's disease was greater than among farmers who had used other herbicides.[124]

- Animal studies have shown that paraquat causes degenerative brain changes that are the pathological hallmarks of Parkinson's disease. Insufficiency of dopamine is known to be one of the major factors in the development of Parkinson's. Paraquat was found to be toxic to dopamine producing nerve cells in animal studies.[125]

- Several animal studies have linked adult onset of Parkinson's disease to postnatal exposure to paraquat[126] indicating that previous exposure to paraquat enhances

vulnerability to neurotoxins, and that there is progressive neurotoxicity with exposure.[127]

- The uptake of paraquat into the brain is age-dependent, with higher concentrations found in very young and very old subjects in animal studies.[128]

- It appears that paraquat produces synergistic effects when used together with maneb, a fungicide.[129]

- Acute and persistent parkinsonism has followed exposure to diquat.[130]

Acute respiratory effects (lungs)

As has been stated earlier, the lung is the primary target organ of paraquat. The effects of paraquat on the lungs are difficult to treat and can be fatal. Damage to lungs cannot always be recognised in chest X-rays or respiratory tests at an intermediate stage.

- In test animals the repeated exposure to small quantities of paraquat in diet or via skin can cause pulmonary fibrosis and exposure to respirable size droplets caused direct injury to the lung.[131] Paraquat droplets respirable size have an increased toxicity to the lung. However, studies indicate that most sprayer types produce droplets that are too large to enter the alveoli but irritant effects on the upper airway are common.[132]

- In a follow-up study of survivors of paraquat poisoning, total lung capacity was significantly decreased.[133] The destructive effects on lung tissue are a consequence of paraquat being accumulated in epithelial (tissue) cells of alveoli. In epidemiological studies the long-term exposure to low doses of paraquat was linked to small but significant changes in the gas exchange of the lungs.[134]

- Exposure to paraquat was associated with a higher risk for chronic bronchitis in Colombia.[135] In a follow-up study in the same area with 1157 children of paraquat users, exposure to paraquat was associated with the incidence of chest colds. The relative risk was almost 3 times higher in the group of children with a high level of paraquat exposure and increased by a factor of 2 or more for the group with low or moderate levels of exposure.[136]

- Exposure to relatively low doses of paraquat but over a longer period can affect the lungs, nerve system, brains and skin. A WHO study identified paraquat as a priority for further examination due to its chronic effects on the lungs. Acute poisoning with paraquat is characterized by delayed pulmonary fibrosis, and could not be excluded that chronic exposure to low doses could affect lung function.[137] A study with 338 workers from plantations in Costa Rica found that paraquat exposure was associated with small but statistically significant changes in gas exchange in the lungs.[138]

- Farmers in the US who use paraquat had a three fold relative risk for wheeze. When asthmatics were included, the risk increased significantly by 27%.[139]

Carcinogenic Potential

- Tumors occurred in one out of three long-term studies with rats; the weight of evidence suggested paraquat was not carcinogenic in rats. Another conclusion was that paraquat is unlikely to pose a genotoxic risk to humans.[140] Positive test results for mutagenicity were found in human lymphocytes and lung cells of hamsters.[141]

- The available evidence indicates that reactive oxygen species produced by paraquat are responsible for its genotoxicity.[142] In human lymphocytes (white blood cells),

paraquat induced slight but significant increases in the frequency of sister-chromatid exchanges.[143] This indicates damage to chromosome (structure carrying genetic information) leading to an increased susceptibility to malignant tumors.[144]

- Paraquat has been rated as "unlikely to be carcinogenic" (category E) by the US Environmental Protection Agency.[145] It had previously been rated as "possible carcinogen" (category C) based on the induction of squameous cell carcinoma (one of the three main types of skin cancer) in rats. Among factory workers who had manufactured 4,4'-bipyridyl (a precursor used on paraquat production) the incidence of skin lesions was increased and these progressed to Bowen's disease (precancerosis of the skin) and, in fewer cases, to squameous cell carcinoma. It appears that exposure to sunlight was a cofactor and production has been modified in the meantime.[146]

- Paraquat contains 4,4'-bipyridyl as an impurity in concentrations of up to 0.2%. The maximum allowed concentration is 0.1% and levels were normally below 0.5%.[147] It has not been clearly established so far whether carcinogenic effects are caused by paraquat or by related bipyridylium compounds.[148] In animal tests paraquat produced lymphoma (cancer that begins in cells of the immune system).[149]

- The risk for malignant melanoma (skin cancer) was increased among male agricultural workers exposed to paraquat. In eight out of ten cases melanoma were situated on the lower limbs, where exposure to sunlight is less plausible than skin contact with pesticides – DBCP and paraquat in particular.[150] Total pesticide use (indexed per agricultural labourer) on coffee and banana was associated with increases in the relative risk for skin melanoma, lung and penile cancer in male workers. Paraquat is used

extensively on banana and coffee. The increase could not be explained by smoking.[151] Further studies at individual levels are necessary.

Reproductive Effects

Animal studies revealed no reproductive effects at doses of paraquat lower than the maternal toxicity dose.[152] Reproductive effects that were found at high rates included foetal mortality in rats, and increased per centage of abnormal eggs in hens.[153] Paraquat is not expected to cause damage to reproduction at levels humans are normally exposed to.[154]

Birth Defects (Teratogenicity)

Animal studies revealed no teratogenic effects at doses of paraquat lower than the maternal toxicity dose.[155] Teratogenic effects that were found at high dose levels include reduced foetal body weight, delayed ossification of sternabrae, increased foetal skeletal variations (vertebrae and hindlimb), increased resorption rate, and increased postnatal mortality rate in mice.[156]

The weight of evidence suggests that paraquat does not cause birth defects at doses theoretically experienced by humans.[157] However, paraquat does cross the placenta and foetal death in pregnant women poisoned by paraquat, and neonatal death after induced delivery, have been reported,[158] as have higher concentration of paraquat in the plancenta than in the mother's blood.[159]

Several recent studies have shown paraquat to be embryotoxic and teratogenic to frogs, with maternal exposure resulting in higher embryo and tadpole mortality, as well as abnormal tail flexure and gut coiling, and stunted growth rate in surviving tadpoles assert that paraquat should be classified as a teratogen.[160]

An estimated 25 million cases of pesticide poisoning occur every year. Among all those pesticides used as suicide agents, paraquat plays a key role.

Source: Jeyaratnam J. (1990) Pesticide Poisoning as a Global Health Problem. World Health Statistics Quarterly.

Fatal unintentional poisonings with paraquat

It has been emphasised that paraquat will not be a hazard with good work practices, proper supervision, strict adherence to hygiene during mixing, application and storage. But fatal unintentional poisoning has resulted from the accidental contamination of the body with paraquat (20%),[161] from swallowing a mouthful of paraquat concentrate (due to confusion of bottles), and from a smaller amount ingested.[162] Workers died after accidentally having ingested a mouthful or a sip of paraquat; in one of the cases poisoning occurred during the decanting of the concentrate.[163]

Fatal unintentional poisonings have been linked with accidental intake and non-adherence to proper safety procedures such as insufficiently diluted paraquat combined with leaking sprayers, which may lead to prolonged skin contact, severe skin lesions and paraquat absorptions via skin. The presence of scratches to skin or small ulcers can be enough to result in absorption of a fatal dose of paraquat from diluted spray solution.

Accidental paraquat poisoning may occur under a variety of circumstances, although the border between "occupational and non-occupational accidental exposure" is not always easy to distinguish. In occupational use, poisoning can occur through the skin, sometimes during knapsack spraying. The presence of scratches, cuts or sores on the skin substantially increases the risk. The confusion of paraquat concentrate or solution due to inappropriate storage in soft drink, beer or other bottles has apparently lessened in recent years but still occurs.

The accidental poisoning of children is of acute concern. In Latin America children are often given the job of carrying spraying equipment. A US Environmental Protection Agency study (to determine oral exposure of children from containers for garden use) analyzed paraquat residues of diluted spray nozzles discharge, and concluded that there is a potential hazard. In Costa Rica, between 1991 and 1995, the exposure circumstances of severe and fatal poisoning in children aged 1-6 included the cases of two toddlers placing respectively a rinsed spray jet and a bottle top into their mouths, two cases of confusion of bottles stored in the kitchen, two cases of children playing with empty bottles, and a 7 year old sister giving 'cough medicine' to a younger brother.[164]

Some cases of unintentional poisonings:

- In Japan out of 346 pesticide poisonings (90% of these systemic) that were recorded during 1998 to 2002 in several hospitals, 25% of cases proved fatal. Of these 346 cases, 36% were due to organophoshates and 20% to paraquat and diquat; 65 cases (18.8% of the total) occurred during spraying, preparation, settlement, or re-entry during spraying.[165]

- In the Philippines two workers were hospitalised after spraying paraquat and one of them died.[166] Two deaths occurred as a consequence of skin exposure to insufficiently diluted paraquat solutions (5% and 2.8%) and as spraying equipment was leaking.[167]

- In Thailand, a worker who had sprayed paraquat for three months developed skin burns. He died after three more months of spraying.[168]

- The spraying of paraquat in a green house had resulted in a fatal poisoning with characteristic features of kidney failure and lung injury.[169] This case indicates that in certain situations the exposure by inhalation maybe

sufficiently high to cause poisoning.

- A worker suffered severe burns after a plane crash during the aerial application of paraquat. The skin was exposed to paraquat over a long period and he died from paraquat poisoning.[170]

Accidental or deliberate ingestion of paraquat has been responsible for a large number of pesticide-related deaths. It is a major suicide agent in many developing countries.[171] In Sri Lanka, a 1989 study of 669 poison incidents indicated that agrochemicals were responsible for 59 per cent and that paraquat was the most common poisoning agent, with a fatality rate of 68 per cent.[172] From 1986 – 1990 in Malaysia, 1156 persons committed suicide by drinking pesticides, mainly paraquat.[173]

In the late 1980s the manufacturers added a blue pigment, a stenching compound, and also an emetic to many formulations of paraquat to help avoid severe unintentional poisonings due to oral intake. In response to a report on the high frequency of suicidal paraquat poisonings in Trinidad, the manufacturer claimed that paraquat suicides are decreasing, and that safe use practices and training have decreased if not eliminated unintentional poisonings. Recent data from developing countries however do not sustain this claim and, on the contrary, an increase of paraquat suicides has been documented in Costa Rica.[174]

In Samoa, the government has taken action to curb the number of suicides from paraquat. Between 1972 and 2001 over 360 people died after exposure to paraquat, in almost all cases as a result of deliberate ingestion. The population of Samoa is 167 000 and around 5000 farmers use herbicides. The formulation sold in the country contains the blue dye, emetic and stenching agents to discourage those intent on suicide, and the death rate reduced when these were introduced, but cases continued and the numbers are beginning to rise again.[175]

According to Eddleston,[176] pesticides are the most important methods of self-poisoning in many rural areas and are associated with a high death rate. The World Health Organization (WHO) (1990) estimates that at least 2 million intentional pesticide poisoning cases occur every year, resulting in 200,200 deaths.

Intentional Paraquat Poisoning

Paraquat can be described as a "major suicide agent" in many countries because:

1. It is highly acutely toxic (one teaspoon is fatal)
2. No antidote exists
3. It is readily available (like many pesticides)
4. It is relatively cheap

(PAN Germany, 2003)

Being highly acutely toxic, with no known antidote, paraquat poisonings result in a very high fatality rate, compared with other chemicals used in suicide[177], although the ingestion of other pesticides (e.g. organophospate) can also lead to high fatality rates.[178] Fatality rates for intentional paraquat ingestion range from 58% in Fiji[179] to nearly 80% in Southern Mexico.[180]

Table 3.5: **Percentage of overall suicide-victims in three countries/regions using paraquat as a suicide-agent**

Country	Time Period	Per centage	Source
Trinidad and Tobago	1986-90	63%	Hutchinson et al., 1991
South-Trinidad	1996-97	76%	Hutchinson & Daisley, 1999
Samoa	1979-2001	70%	Le Samoa, 2001

Source: PAN Germany, 2003

Easy Availability of Paraquat

A survey on paraquat deaths in Perak, Malaysia by Wong & Ng (1982) states that "there were definite associations between those who had paraquat and the easy availability of paraquat to the victims who either lived near estates or were the relatives (wives and children) of estate workers". According to the researchers, "one of the saddest points to note in this survey is that the majority (70%) of the poisonings were in the age group 11 to 30, and as there were few survivors, the deaths were those of healthy and young victims. One feels frustrated to see young people who drank paraquat in the heat of the moment seeking help from hospitals when nothing can be done for them".[181]

Some studies do suggest that the easy access to a potent substance, such as paraquat, increases the number of suicides and may result in death when in fact there was no definite intention on the part of the victim to commit suicide,[182] as in the case of the Malaysian survey discussed above .

Undoubtedly, the highly toxic pesticide paraquat, with no known anti dote is a major suicide agent in many developing countries. The misuse of paraquat for deliberate self-poisoning results in a high mortality rate and causes thousands of deaths every year. Limitations on the availability of paraquat to professional users may mitigate the problem, conditional on the successful enforcement of tight regulations. The only solution is a complete paraquat-ban and production-stop.

"You cannot purchase a sleeping tablet without a doctor's prescription. Anyone can walk into a retail outlet and buy paraquat without any questions asked. There are no controls. Paraquat must be banned."

– Senior Executive of a Malaysian plantation company.
7 October, 2006

Environmental Concerns

The hazards of paraquat are rated in the EU as follows

- Dangerous for the environment;
- Very toxic to aquatic organism
- May cause long term adverse effects
  (EC 2004)

In Australia, among 40 herbicides commonly used on field crops, paraquat has the highest toxicity. In risk assessment of pesticides based on the environmental impact quotient (EIQ), paraquat is ranked as the 7th most hazardous among 85. It is the 2nd most hazardous among 38 due to its ecological impacts on farm workers.[183]

Significant levels of paraquat have been measured in rivers and coastal waters. In water, paraquat is absorbed on the sediment, plants and suspended particles. Suspended soil particles with absorbed residues were transported into a lake and deposited on the ground of drainage, ditches and lake sediment in some studies.[184]

Paraquat is slightly toxic to fish species based on LC_{50} values.[185] It was found to be moderately hazardous to some species in the juvenile stage.[186] In carp, paraquat accumulated in all organs studied and accumulation increased with the water temperature. Paraquat was seen to inhibit acetylcholinesterase (an enzyme that stops signalling in the nervous system).[187] In one study, 4 days after paraquat was applied as an aquatic herbicide, weeds sampled showed significant residue levels. Small amounts of residues were found in potatoes treated with paraquat as a dessicant and boiling the potatoes did not reduce the residue.[188]

Paraquat has been ranked as 'very persistent' in soils by a Cornell University environmental risk index.[189] Paraquat is very slowly biodegraded and has an estimated half-life of greater than 1000 days. The reported half-life in one study ranged from 16 months (aerobic laboratory conditions) to 13 years (field study).[190] Due to concerns of build up of paraquat

in soil, Germany has limited the use of the herbicide.

Desorption of soil-bound paraquat may decrease in soils with kaolinite, a low clay content or in the presence of cations such as ammonium from fertilizers.

Hazard labels in US

The US EPA states that paraquat exposure to birds, mammals, non-target terrestrial and semi-aquatic plants including endangered species may result from paraquat spray drift during application. The agency has proposed risk mitigation measures to lessen ecological effects such as maximum rates of application. All paraquat products must place a statement in the "Environmental Hazard" section that warns the user about possible adverse effects to non-target and semi-aquatic plants due to drift.[191]

Germany : wider registration rejected on environmental grounds

The German Federal Biological Institute (BBA) refused re-registration of products containing paraquat based on its potential to accumulate in the soil, which could lead to the build up of harmful levels after a period of years. ICI (forerunner of Zeneca) challenged the ruling in the courts. Although the courts subsequently allowed a new formulation to be registered, the product is restricted to use on field crops only once every four years. Wider registrations were refused by the Court because of effects on the environment.[192]

The European Commission's Scientific Committee on Plants said in December 2001 that a more detailed appraisal "on the likely effects of paraquat on the rate of degradation of organic material in soil" should be provided. It expressed concern about the effects of paraquat on animal welfare, especially on hares and birds. The committee concluded that paraquat can be expected to cause lethal and sub-lethal effects for hares and this is confirmed by field reports. On the effect of paraquat on birds, it said that the possible effects on the reproduction from spray solutions reaching eggs in nests and

Ban/Restriction of Paraquat

Table 3.5: **Prohibition or ban of paraquat**

Country	Date
Sweden	31 December 1983
Kuwait	01 January 1985
Finland	30 August 1986
Austria	01 January 1993
Denmark	01 July 1995
Slovenia	13 July 1997
Cambodia	15 December 2003
Syria	21 November 2005
United Arab Emirates	December 2005

Source: Berne Declaration (n.d.) (web)

Table 3.6: **Withdrawal or non-authorisation of paraquat**

Country	Date
Norway	01 January 1981
USSR (GUS?)	01 August 1988
Hungary	30 September 1991
Malaysia	27 August 2002
Switzerland	20 November 2002

Source: Berne Declaration (n.d.) (web)

Table 3.7: **Restrictions of the distribution and/or use of paraquat:**

Country	Date
Korea, Republic of	30 March 1987
Philippines, Republic of the	01 January 1989
Colombia	01 January 1989
Dominican Republic	04 June 1992
Germany	11 August 1993
Indonesia	01 January 1999
Caribbean	01 January 1999
European Union	01 January 2003
Belize	01 January 2003
Chile	01 January 2003
USA	01 January 2003
New Zealand	01 January 2004
Costa Rica	19 September 2005
Belgium	19 September 2005
Taiwan	1 June 2006

Source: Berne Declaration (n.d.) (web)

resulting in reduced hatching and serious abnormalities could be of serious concern.[193]

Regulations

Regulators, especially those responsible for protecting human health and safety, are charged by our society to act before all the evidence is in …before every issue is nailed down and ten articles have been published in the rigorous academic literature.

-William Drayton, Jr.
Former Assistant Administrator Environment Protection Agency

Health, safety and environmental regulations have saved millions of lives and prevented diseases and injuries. The benefits of these regulations are not often appreciated by the anti-regulatory lobby. Industry lobby groups, public relations firms, academics and even opinion leaders who constitute the anti-regulatory group use factors such as cost, hardship, time, inconvenience and anti-bureaucracy to influence regulations.

For example the 2004/2005 Annual Report of the Malaysian Croplife & Public Health Association (MCPA) states under the heading of **Regulatory Burden**: "The industry supports Government efforts to regulate the pesticides industry and to ensure that pesticides are used safely and effectively. The major challenge faced by the industry is 'over-regulation' and the introduction of unclear and subjective guidelines that are detrimental to free trade and positive development of the industry. For the plant science and public health industry to deliver modern progressive crop and public health solutions, it must not in the first place be encumbered with insurmountable regulatory burden. The industry will continue to seek dialogues with the regulators to ensure that the industry enjoys a healthy development without being over burdened with unproductive guidelines."

The MCPA opposed the Malaysian Government's ban on

paraquat and has been lobbying the government to repeal the ban. Paraquat is the most cost effective weedicide, claim producers and users.

The anti-regulatory lobby has never ceased its work ever since laws on drugs, chemicals, automobiles, textiles, steel and other industries came into force to protect the health and safety of people and the environment. Lobbyists are concentrated in centres where regulations are proposed, hammered out and finally passed as pieces of legislation. The anti-regulatory drumbeat echoes throughout Washington, Brussels and the national hubs of government power.

According to a recent report by Cronenberg (2006)[194] on the huge number of lobbyists concentrated in Brussels reflects the reality that two-thirds of all legislative decisions for the EU are made in that city. It is in Brussels that lobbyists get easy access to the European Parliament, attend committee meetings, and most easily find out which of the 732 members of the European Parliament need a push to a certain direction.

"The lobbying and political pressure the EU executive body faced concerning the Registration, Evaluation and Authorization of Chemicals (REACH) proposal was more intense than (during the progress of) any other legislation the current Commission has proposed since taking office in 1999," declared former EU Commissioners Margot Wallström (Environment) and Erkki Liikanen (Enterprise) as quoted by Greenpeace.

Greenpeace has charged that: "The same lobbying practices that trigger huge scandals in the USA appear to be acceptable in Brussels. In the USA, lobbyists are required to file detailed reports to Congress twice a year, listing their clients, fees and issues they follow. In the EU lobbyists operate without restrictions".

CorpWatch – Cartoon by Khalil Bendib

The transnational corporations also lobby international organisations, such as FAO and CODEX, to weaken guidelines and they influence national governments to weaken legislation, if possible replacing them with voluntary codes which leave control in the industry's hands. For example, under industry influence, Codex progressively raised the maximum residue level for glyphosate in soybean first to 5mg/kg and then to 20mg/kg, without any public consultation or discussion. Monsanto then applied to the Australia New Zealand Food Authority to raise the allowable level in soybean in those countries from 0.1mg/kg to 20mg/kg, citing international harmonization as the reason.[195]

The litany of corporate scandals from Bhopal, Chernobyl, Erika, Exxon Valdez and Seville could have only happened because regulators and governments were influenced by the anti-regulatory lobby. The absence or lack of monitoring of legislation by enforcement agencies further contributes to catastrophes and untold sufferings for millions of victims of disasters. They could have been prevented by effective implementation and monitoring of regulations.

The work of regulators and civil society advocacy groups are often criticised by the anti-regulatory enterprise as "an assault on the free market system and freedom itself." Corporations fail to recognize the most important freedom;

which is the freedom of victims of chemical poisonings, of automobile accidents, of occupational health hazards, of risks from contaminated food and industrial disasters.[196]

There are competing notions of freedoms. The corporate notion of freedom means freedom to continue production and sale of their products even if they cause serious harm to people and the environment. On the other hand, the people particularly potential victims want freedom from harm and the protection of their fundamental rights to safety in the workplace and the marketplace. The role of regulators is to protect people and the environment from harm and ensure that people benefit from regulations.

A study on the influence of pesticide regulation on acute poisoning deaths in Sri Lanka[197] showed that the country's programmes of pesticide regulation were beneficial. This is suggested by the fall in the case fatality proportion (CFP) amidst a rising incidence of self-poisoning. However, a closer examination of the pesticide-induced deaths at one hospital in Sri Lanka revealed switching to other highly toxic pesticides, as one was banned and replaced in agricultural practice by another. This study urges that future regulations to predict this switching and bear in mind the ease of treatment of replacement pesticides. Such regulations must go hand in hand with other strategies, such as integrated pest management, to reduce the overall pesticide availability for self-harm.

Regulatory control aims to substitute "problem" pesticides with safer, less toxic pesticides. It may involve total bans or restrictions on the quantity of pesticides imported and/or distributed, based on agricultural need and availability of alternatives.[198]

An Injury To One Is An Injury To All
(An Old American Labour Saying)

According to the International Labour Organization (ILO), the regulatory aspects of agriculture tend to be excluded from the provisions of many national labour laws and is not subject to any comprehensive international standards. Where regulations exist, they are often sporadically applied because the effective observance is poor due to inadequate legal provisions, low unionisation among workers and insufficient labour inspection. The other shortcomings faced by the agricultural sector include the use of multiple complex chemicals and technology, dispersal of workforce in remote rural areas, the variety of jobs performed by agricultural workers, environmental factors beyond human control, and the inadequate application of safety measures in agriculture.

The ILO through its Global Programme on Safety and Health at Work (SAFEWORK) aims to protect workers' health, prevent and reduce occupational accidents, injuries, occupational and work related diseases by improvements in working conditions and environments. Another multi-country programme, the ILO/FINNIDA Asian-Pacific Regional Programme on Occupational Safety and Health is designed to strengthen occupational safety and health through information and training in 20 countries of the Asia Pacific region, including Malaysia.

The continuing need for regulations of the trade and use of chemicals has been recognized in international and national regulatory forums and mechanisms.

International Regulatory Controls and Guidance for the Users

The following are the conventions for the international standards regarding acutely toxic pesticides like paraquat:

- International Programme on Chemical Safety

The International Programme on Chemical Safety has pointed out that fatalities have resulted from inappropriate behaviour during the use of paraquat, such as using a leaking sprayer which may lead to severe skin lesions and absorption. Further, the damage to skin or eyes and nose-bleeds reinforce the need for strict personal hygiene and rigorous adherence to safe handling procedures.[199]
It is recommended:

- that the summary of the safety guide on paraquat should be easily available to users and to all heath workers concerned with the issue;

- the safety guide be displayed on equipment at, or near, entrances to areas where there is potential exposure to paraquat, and be translated into the appropriate language.[200]

Recommendations on personal protection during the use of paraquat are:

- Avoid all contact with skin, eyes, nose, and mouth, when handling concentrated paraquat.

- Wear PVC-, neoprene- or butyl-rubber gloves (preferably gauntlet form), neoprene apron, rubber boots and face-shield.

- Wear a face-shield when handling and applying the diluted formulation.

- Paraquat should not be sprayed with inadequate dilution, e.g., by hand-held, ultra-low-volume application.

- Paraquat should not be used by people suffering from dermatitis or by people with wounds, notably on the hands, until these have healed.[201]

- Food and Agriculture Organization of the United Nations
  The UN Food and Agriculture Organization (FAO) and the World Health Organization have recommended restrictions on availability of toxic pesticides. Paraquat is placed in category 4, which means it should be available only to commercial users (farmers, orchardists, etc) and not to the general public.[202]

  The FAO demanded 20 years ago that farmers in the tropics should abstain from using pesticides that would require impractical and expensive protective equipment. The International Code of Conduct on the Distribution and Use of Pesticides and in the Provisional Guidelines on Tender Procedures for the Procurement of Pesticides has been adopted by governments.

- Intergovernmental Forum on Chemical Safety
  The fourth Intergovernmental Forum on Chemical Safety (Forum IV) pointed out that certain aspects of the problem of pesticide poisoning will be addressed by the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

  Forum IV recommended that Conventions and Guidelines of the International Labour Office regarding health and chemical safety be implemented – such as Convention 169 on the work conditions of indi-genous populations to prevent the use of specially dangerous pesticides.

- International Labour Law
  The issue of workplace safety in agriculture is addressed by several recommendations, conventions and codes of practice established by the International Labour Office.
  The ILO Chemicals Convention of 1990 provides that employers shall assess the risks arising from the use of chemicals at work and shall protect workers against risks by

appropriate measures, such as the choice of chemicals and practices that eliminate or minimise the risk – engineering controls and occupational hygiene.

- Rotterdam Convention on the Prior Informed Consent (PIC) Procedures for Certain Hazardous Chemicals and Pesticides in International Trade
  The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade regulates import and export of pesticides. For a substance to come under the regulation of the Rotterdam Convention the criteria are that it is (a chemical formulated for pesticidal use that produces severe health or environmental effects observable within a short period of time after single or multiple exposures, under conditions of use).

  Paraquat fulfils the criteria for chemicals under the PIC Procedure and has been banned by more than the required minimum of two governments (in two different regions of the world).

The Precautionary Principle[203]

The precautionary principle directs that action be taken to reduce risk from chemicals in the face of uncertain but suggestive evidence of harm.

There are many definitions of the precautionary principle, but most well known are those of the 1992 Rio Declaration's definition of a precautionary approach and the 1998 Wingspread Conference on implementing the Precautionary Principle.

The Rio Declaration from the UN Conference on Environment and Development (Principle 15) stated:

> *In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as*

a reason for postponing cost-effective measures to prevent environmental degradation.

The precautionary principle has been reiterated in many forms in many documents, but the central message remains the same: **action should be taken to prevent harm to the environment and human health, even if scientific evidence is inconclusive.** It permits a lower level of proof of harm to be used in policy making whenever the consequences of waiting for higher levels of proof may be very costly and/or irreversible.

The Wingspread Statement on the Precautionary Principle identifies four central components of precautionary policies, and these have since been elaborated frequently:

- taking preventive action in the face of uncertainty
- placing responsibility on those who create risks to study and prevent them
- seeking alternatives to potentially harmful activities
- increasing public participation and transparency in decision-making.

In contrast, current pesticide regimes worldwide require substantial evidence of harm before regulatory actions are taken, regardless of availability of safer alternatives.

The precautionary principle emerged into public thinking about the risks resulting from various human activities during the 1980s and 90s, although it actually found expression in Scandinavian and European legislation as far back as the 1970s. In Sweden, the principle first found expression in the 1973 Act on Products Hazardous to Man or the Environment; in Germany, the 'Vorsorgeprinzip' or 'foresight principle' was established in water protection law in 1970.

It has been incorporated in some form in regional, national and state legislation in a number of countries, such as a 2000 European Union directive regarding food safety (Article 7 of Regulation (EC) No 178/2002).

National Legislation

Malaysia

The Pesticide Act of 1974 is the principal legislation for the control of pesticides in Malaysia. It is implemented by the Pesticides Board which comprises various heads of government agencies, and is under the jurisdiction of the Department of Agriculture. The responsibility for the implementation of the FAO Code of Conduct on the Distribution and Use of Pesticides too lies with the Department of Agriculture.

Presently seven subsidiary legislations are being enforced in the following area: registration, importation for research and education purposes, labelling, licensing for sale and storage for sale, highly toxic pesticides, advertisement, and pest control operators.

Significant amendments were made in 2005 to the Pesticides Act 1974. They include the imposing of heavier penalties for all offences, the control of the importation of pesticides as a registration sample or an analytical standard, the control of possession or use of unregistered pesticides and unapproved use of pesticides, the mandatory requirement imposed on the pesticide offender to pay for the pesticide disposal charges and so on.

The Occupational Safety and Health Act (OSHA), Malaysia 1974

One of the encouraging achievements in the regulatory arena is the enactment of a new Occupational Safety and Health Act in February 1994 (OSHA, 1994). The OSHA provides the legislative framework to promote, stimulate and encourage high standards of safety and health at work, and is possibly relevant to the concerns of plantation workers. The Act aims to promote safety and health awareness and establish effective safety practices through self-regulation, the long-term goal being to create a healthy and safe working culture and environment in Malaysia. The OSHA 1994 was implemented after much delay and pressure from vested groups including a

number of pesticide companies to 'tone' down the law.

In an assessment of the OSHA 1994, the Tenaganita and PAN AP study states that the provisions in the Act are favourable towards pesticides reduction in the plantations. Weaknesses in the Act were identified in the areas of interpretation of the Act, information, the strong orientation towards industry in terms of representation and the weaknesses in removing or mitigating the hazards and risks of chemicals. One of the weaknesses is with regards to the establishment of safety committees in the work place. Originally, a Safety Committee was to be formed when there are 20 or more workers in an establishment. The present requirement is for workplaces employing 40 or more workers. If the safety and health of workers is to be safeguarded, then the above-mentioned should be amended to apply to all establishments employing 20 or more workers.

Tenaganita has been advocating since 2000 for a Safety Committee for pesticides sprayers. One of Tenaganita's recommendations is for a national register for all pesticide sprayers. Such a register would be useful in monitoring the health of pesticide sprayers.

Paraquat – Need for tougher legislation

A number of governments in industrialised and developing countries, primarily concerned with health risk, have already banned or restricted the use of paraquat.

Unfortunately, the EU decided in October 2003 not to ban Paraquat. This decision has put the fate of such pre-existing national bans in question, raising serious concerns by EU member states about their ability to protect the health of their citizens and environment from pesticide damage on the national level. The European Commission is aware of the dangers of paraquat, but nevertheless had approved its use, ignoring growing number of member states who openly rejected an EU-wide approval of paraquat, postponing a vote at the last four committee meetings.

Therefore, PAN along with environmental NGOs and Trade

Unions have demanded that the Commission takes note of the growing opposition to the approval of paraquat and reverse the decision, prioritising the protection of human health and environment. Additionally, PAN emphasises that this controversial decision was made in the European context, and therefore cannot have any implication for other regions, especially developing countries.

At the international level, on the occasion of the Fifth Session of the Intergovernmental Forum on Chemical Safety, 25-29 September 2006, in Budapest, Hungary PAN International strongly recommended that:[203]

- The authorities in all countries ban the use of paraquat
- Governments attending the Fifth Session of the Intergovernmental Forum on Chemical Safety, that are party to the Rotterdam Convention on Prior Informed Consent (PIC) make efforts to ensure notification is made on all bans or severe restrictions instituted on paraquat to the PIC Secretariat
- Syngenta, the main producer of paraquat, stops the production of paraquat
- Syngenta takes full responsibility and assumes liability for the severe health effects on communities resulting from paraquat use
- Paraquat be replaced with safer and more sustainable control methods

In 2003, at the Intergovernmental NGOs Forum on Chemical Safety (IFCS IV) in Thailand, PAN asserted that under-reporting and subsequent lack of information should not be used to underestimate the problem of acute poisonings. PAN also upheld calls to restrict the availability of acutely toxic pesticides such as paraquat, and promote research on alternatives.

There is sufficient scientific evidence that paraquat is highly toxic and causes severe adverse health effects on humans. Regulatory authorities still in doubt should at least apply the Precautionary Principle, as embodied in Agenda 21 of the RIO Summit 1992, and the Treaty on Persistent Organic Pollutants (POPs) in 2001, also known as the Stockholm Convention. Preventive measures to protect health and the environment should be undertaken even when risks are not fully understood, or where there are gaps in knowledge either on the precise effects of the pesticides or on the mechanisms for toxicity. Application of the Precautionary Principle to paraquat would require that it be removed from the market, on the basis of the existing body of evidence of significant adverse effect.

With so much evidence stacked against paraquat, it is only logical that this poison has to go from the face of the earth. In the next chapter, we trace the struggle of workers, Tenaganita and PAN AP to stop the harm that it is doing.

(Insert Picture – Picture No.4)

A pesticide sprayer discusses the health effects of her job with the help of a wall chart during an awareness building session by Tenaganita in 2006.

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CHAPTER FOUR

BATTLE AGAINST PARAQUAT

Starting Over

As this book was in the final stages of being written in late September 2006, the Malaysian government announced that re-registration of paraquat would be allowed from November 1, 2006. It also said that the ban on paraquat that it had imposed on August 27, 2002 would now take effect in November 2007. This was the second time the conditions of the ban had been changed, the first being in 2005, when the restriction on paraquat was relaxed to allow its use for oil palms that are less than two years' old. The latest decision taken by the cabinet was made known via a circular from the Pesticides Control Division of the Ministry of Agriculture and Agro-based Industries.[1]

The postponement of the ban and the reopening of the application for registration of paraquat underscores the formidable odds that are stacked against the basic right of the agricultural worker and farmer to work in an environment free from harm. This action is highly ironic considering that the Pesticides Control Division itself had undertaken extensive research into the hazards of the herbicide. It had come to the inevitable conclusion that the conditions under which the chemical is used in Malaysia's tropical climate pose unacceptable risks to humans and the environment and therefore its use had to be stopped.[2] Why then has the same ministry pushed to roll back the ban, effectively making an about turn on the position it took just four years ago?

For the public interest groups that have fought to keep paraquat at bay, it may feel like an endless task, since the postponement of the ban reverses decades of advocacy by citizens groups. "It is a time to regroup the forces of civil society, to reaffirm the quest for a saner, poison-free future and to find new strength to begin the struggle anew," said Tenaganita's director Irene Fernandez. A global campaign to stop the use of paraquat is in progress to generate worldwide awareness of the problem and bring about a change to an alternative poison-free future in agriculture.

Campaign Beginnings

In Malaysia, the campaign to ban paraquat took root in the 1980s when citizens groups conducting awareness programmes at the grassroots level encountered evidence of farmers and plantation workers suffering from various health problems due to their exposure to pesticides. Groups like the Consumers Association of Penang, Sahabat Alam Malaysia (Friends of the Earth, Malaysia), Selangor Consumers Association, Environmental Protection Society of Malaysia and others began to document the conditions of poisoning victims and present their cases to the authorities.

At the same time, citizens' action was taking on an international dimension too. In May 1982, following a

conference on the global pesticide trade organised in Penang, Malaysia by the International Organisation of Consumers Unions (IOCU), the Pesticide Action Network (PAN) was born. The pioneers consisted of 39 representatives from consumer, environmental, farmer and development organisations in 16 countries, and their "collective anger over the damage and human suffering caused by the worldwide proliferation of deadly chemicals led to the birth of PAN," states the PAN AP publication *Problem Pesticides, Pesticide Problems* by Gretta Goldenman and Sarojeni Rengam.[3]

It was a flowering of borderless citizens' activism against the juggernaut of the global economic engine to which multinational corporations and governments had hitched their wagons. Energised by their common cause, participants in the network agreed to focus their attention on the roots of the problem, adopting the following aims:

- Expansion of traditional, biological and integrated pest management and an end to the overuse and misuse of pesticides.

- Imposition of export and import controls on the movement of hazardous chemicals in particular pesticides.

- Immediate notification by governments of a ban or restriction on a pesticide.

- Public release of information by governments on the export and import of pesticides.

- Withdrawal of funding by international development agencies of projects involving the use of pesticides which cannot be safely used under local conditions.

- Reversal of the Green Revolution practice of developing seeds which need large doses of pesticides and fertilisers.

- An end to the vicious circle whereby poisonous pesticides used in the Third World end up as residues in food eaten all over the world.

The global movement quickly gained steam, and on World Environment Day, June 5, 1985, PAN launched its "Dirty Dozen" campaign to stop the application of 12 highly toxic pesticides "wherever their safe use cannot be assured". The twelve are:

- Camphechlor (toxaphene)
- Chlordane/heptachlor
- Chlordimeform (Galecron)
- Dibromochloropropane (DBCP)
- DDT
- The "drins" (aldrin/dieldrin/endrin)
- Ethyl dibromide (EDB)
- Lindane/hexachlorocyclohexane (HCH)
- Paraquat
- Ethyl parathion
- Pentachlorophenol (PCP)
- 2,4,5-T

The Dirty Dozen Campaign was launched with press conferences, demonstrations, civil disobedience and other public events in more than 30 countries. [4]

At about the time the global citizens' campaign was taking off, grassroots activists like M. Varataharajoo of Sahabat Alam Malaysia had seen enough of the harm that pesticides were causing to workers' lives to raise the alarm on the local front. He got the media to bring the plight of affected sprayers to the nation's attention.

The newspapers – English, Malay, Chinese and Tamil – splashed across their pages the horrific stories of plantation workers who had been blinded, suffered frequent nose bleeds, breathing difficulties, burns on the skin, peeling fingernails and toenails, among other effects after spraying paraquat for some months or years.

But just because the media was creating a sensation about

the situation, it did not mean that plantations were about to stop using pesticides or that the Agriculture Ministry was going to outlaw them. The response of one plantation management spokesperson whose comments were sought by a newspaper was revealing: "We feel that the problem has been exaggerated." [5]

The blatant denial of injustices, downplaying of incidences of poisoning, forwarding of irrelevant issues and other diversionary tactics was frequently encountered by community workers and activists who sought to bring justice to the disempowered victims. A common problem was that the plantation workers were forbidden to meet with the community organisers who sought to equip the sprayers with knowledge about the poisons they were dealing with at work. These activists became persona non grata to plantation managements, who instructed their security detail to bar them from entering the plantations. [6]

However, these attempts to stonewall advocates of a humane and safe working environment for agricultural workers and farmers only led to a build up of momentum among citizens' groups for action on paraquat. In September 1985, the Selangor Consumers Association (SCA) and the National Union of Plantation Workers (NUPW) told the press that they had set up a joint action committee to research into the dangers of paraquat exposure. The results of the study would be used to educate farmers and plantation workers on the dangers posed by the chemical. "Paraquat is very toxic and many of the workers are not aware of the dangers. We hope to make them aware of the dangers in handling paraquat," the then SCA president Hamdan Adnan said when announcing the project.

Concurrently, Sahabat Alam Malaysia was communicating its concern to government leaders. Telegrams calling for a ban on paraquat were despatched to the then Agriculture Minister Anwar Ibrahim and Health Minister Datuk Chin Hon Ngian. SAM said a total ban was the only solution to the increasing number of deaths due to paraquat poisoning.

By this time, the bureaucratic cogworks too had begun to

move. In September 1985, the Agriculture Ministry had begun to recognise the seriousness of the poisoning incidents. Early that month, the then Deputy Agriculture Minister Dr Goh Cheng Teik announced that a poison control centre would be set up as part of the safety campaign on the use of pesticides. Overtly then, the authorities seemed to be acutely aware of the hazards associated with pesticides since the centre "would be directly involved with the diagnosing of poisoning and providing advice on medical treatment," as a newspaper reported prominently. A poison control centre would provide the focal point for research and information on the effects of toxic chemicals on humans, and so enhance the nation's expertise in this new chemical-based experience.

Still the basic mindset was that chemical-based agriculture would roll right on, and the costs in human terms would be managed through better worker education and occupational safety standards. The plantation industry was in for a bit of finger-wagging advice.

"He called on the plantation managers and hospital assistants to play their part in educating workers on the safe use of pesticides," the report in the *New Straits Times* continued. "'You can supervise their work and make sure they know how toxic the chemicals they handle are and how to use them in the proper way.' He said that the paraquat poisoning cases of the spray gang that was reported in the media 'could have been avoided if adequate precautions were taken by the workers and supervisors.'" [7]

Elsewhere in the government, the human toll from pesticide spraying had hit closer to home. Among government agencies, perhaps the Health Ministry has shown the greatest concern about the shocking hazards that sprayers were exposed to. At the closing of a seminar on "Preventive Medicine and Pesticide Poisoning" organised by the Selangor Planters Association and co-sponsored by ICI Agriculture in September 1985, the Deputy Health Minister Datuk K. Pathmanaban gave both parties a scolding:

"I regret that neither the industry which produced

paraquat nor estate managements have shown serious enough concern over the matter (of workers' exposure to risks when applying the herbicide). Estate managements should be more responsible."[8]

The Health Ministry was certainly stirring at the growing statistics of harm that implicated paraquat. On September 9, 1985, the *New Straits Times* front-paged a statement by the Director-General of Health Services Tan Sri Dr Abdul Khalid Sahan that "stringent control of paraquat should be imposed, or if possible, a less poisonous substance used." He said the widespread availability of the herbicide was a contributory factor for numerous cases of paraquat poisoning and alarming mortality rate of such cases.

Between 1985 and 1986, the media continued to highlight cases of workers' complaints – some going blind, others suffering rashes, nose bleeds, weight loss and other problems associated with pesticide poisoning – that Varataharajoo brought to their attention. Paraquat also featured in rising reports of suicide, due to its easy availability.

In one interview with *The Malay Mail,* Varataharajoo, who came to be known as "Pesticides Rajoo" said that in four years working as a field officer for SAM, he had handled some 250 cases of pesticide poisoning among workers in over 40 plantations in the states of Selangor, Negri Sembilan, Malacca, Johor and Pahang in peninsular Malaysia. He described this as the tip of the iceberg of a major problem among plantation workers.

The kind of working conditions that plantation workers were operating under is revealed in a letter by the plantation workers union NUPW to the management of the Minyak Estate, that was then owned by the French-based Socfin Group, in the state of Selangor in August 1986. Five women who had been working as sprayers for four years complained that they were no longer allowed to stop spraying an hour earlier to wash themselves and clean their spraying equipment, which was the practice until then.

The complaint was first taken up by the union's plantation

level committee, but without avail. As a follow up, the union wrote to the plantation manager asking him to offer alternative work to the five workers or revert to the earlier practice. Two months later, these five workers wrote to the management of the French-owned parent company Socfin Berhad at its headquarters in Kuala Lumpur asking for alternative work, drawing attention to the hardships that women sprayers had to endure. They said that they had brought up their problems with the plantation management repeatedly but their concerns had not been entertained. The standard reply they were given was callous and designed to discourage dissent: "You have to work like this until retirement. There is no alternative work for you."

The grievances included:

- inadequate provision of protective gear (only one set was given out in a year, with no replacement for damaged items),
- the heavy workload (a four-gallon backpack had to be filled up to 25 times in a day, making a total of 100 gallons of weedicide to be sprayed daily over sometimes difficult terrain), causing chest pains,
- the effects of pesticide poisoning.

The workers were dissatisfied with the medical attention they received. Although the workers were constantly exposed to toxic chemicals at their workplace, they had not been given a single medical examination in six years. Even basic amenities like a first aid kit and soap for washing up before their meals were not provided. Copies of this letter were sent to the Director-General of Agriculture, Secretary of the Pesticides Board, Director-General of Health and Director-General of Labour.

The workers' complaint speaks volumes about the working conditions of the plantation labourers. While these workers were driven to take their case up to their highest levels of the company and the government because of their unbearable

situation, the vast majority were resigned to their conditions of work due to their lack of bargaining power. With no skills at their command, they had to accept whatever work was given to them, no matter the hazards.[9]

The paraquat victims' plight was too atrocious to be endured. A bigger event was needed to make the authorities take heed of the situation. It was time to organise a nationwide campaign.

"In 1986, hundreds of workers from Malaysian rubber and oil palm plantations gathered at a plantation in Selangor," a report in the *Dirty Dozen Campaigner,* the newsletter produced by the network's North America centre recorded in September 1989. "Bearing placards and banners, these workers demonstrated peacefully to demand that the Health Ministry ban paraquat. The occasion was the launching of a national anti-pesticides campaign initiated by Sahabat Alam Malaysia."

Between 1978 and 1985, the report said, "paraquat accounted for 66% of 1,442 reported pesticide poisoning cases. Many more cases go unreported." Quoting a 1985 Department of Agriculture survey, it said "only 11% of workers interviewed had been trained before handling paraquat, while 67% did not receive any protective equipment from the plantation management. Thus it is not surprising that 64% of the workers reported symptoms of poisoning."

"There is no system to monitor the effects of paraquat exposure on workers' health in Malaysia. Workers who complain to management have been known to face considerable harassment. This management indifference results largely from the lack of effective government action," the report asserted.

A constant theme in the fight for a safe working environment is the dichotomy in the government's actions: good laws, but dismal enforcement; deep concern in one ministry and a callous response from another.

"While the Ministry of Health expresses concern over the number of paraquat poisonings," the report said, "the Ministry of Agriculture reiterates that it is the 'cheapest and most effective' weed killer in the market, despite the dangers posed …"

Sahabat Alam Malaysia's report also indicted the plantation workers union for its inaction. "For years, the paraquat issue has not been a priority for the National Union of Plantation Workers. However, workers are pressuring their union to take a stand against paraquat use."

Clearly, getting protection for the sprayers was not going to be a walk in the park. So, Sahabat Alam Malaysia began to hammer away at the government machinery by presenting the workers' case repeatedly to the authorities. "Petitions and memoranda are continually sent to the government, citing the increasing numbers of paraquat poisonings and deaths and appealing for a total ban on the use of the substance." It also pressed for medical examinations to be carried out on victims to determine the extent of poisoning. Court action became an option in some cases, especially because regulatory measures were ineffective in reality.

"The increasing frequency of paraquat-related deaths and accidents demands a ban," the report's conclusion stated. "Tinkering with notions of 'control' will not work. Effective enforcement of regulations is unlikely, as there are numerous distribution points and extensive use, and few personnel or resources devoted to monitoring. Ministry of Agriculture officials have admitted that they lack the expertise and facilities to conduct comprehensive studies on the effects of widespread use of toxic pesticides. The campaign for a total ban therefore continues."[10]

Meanwhile, mounting evidence against paraquat was coming to the attention of PAN AP. In response to a query from Sarojeni Rengam, who was PAN AP coordinator at that time, Esa Nikunen of the Finnish Ministry of the Environment wrote in November 1989: "The application for paraquat use was discussed in the spring of 1985 in connection with re-approval of a product called Gramoxone. The Pesticides Board then decided to withdraw the approval for Gramoxone, and it was to be taken off the market by 30.8.1986. The reasons given for the decision were that paraquat, the effective ingredient in Gramoxone, has been found to be very toxic to man even in

small doses and may even be lethal, as no effective antidote or cure is known." [11]

At the local level, the Education and Research Association for Consumers (ERA Consumer) was also on a fact-finding mission. In a survey of violations of the FAO's International Code of Conduct on the Distribution and Use of Pesticides in 1989, the organisation reported a number of cases, including that of a former sprayer on a large plantation who suffered a splash of the chemical in the left eye while she was decanting paraquat. Devi Subramaniam was 17 at the time of the accident in 1986.

"The management had not provided her with any safety equipment," the report noted. "The only water available was found in a drum that had contained paraquat. She waited for 15 minutes before her co-workers collected enough drinking water to wash her eye with."

"Subsequently, she was taken to the estate clinic where a para-medic examined her." She was given a medicated cream to apply onto her eye and eight days' leave. When her symptoms persisted after 10 days, she was referred and admitted to the plantation hospital, where she remained for two weeks. The doctor diagnosed her as having laceration/photophobia.

After her discharge, she returned to spraying and her symptoms recurred. Five months later, she was back in hospital for further treatment. This time she was diagnosed as having "Paraquat Conjunctival Flare" and "Photophobia". The doctor advised her to work in a shady place wearing dark glasses.

"However, upon returning to work on January 6, 1987, she was once again given field work without any protective clothing. She developed severe headaches on her left side … She finally quit her work on the plantation."

"During her ordeal," the report pointed out, "she felt powerless to take compensatory action and was not informed of her rights."

"For three years she clung on to her medical report/letters. She heard we were interviewing cases of pesticide poisoning,

so she came to tell her story for the first time."[12]

Seeing the pressing need for awareness raising and action on the problems associated with pesticides, ERA Consumer continued to involve itself in pesticides campaigns through surveys, participation in consultations and advocacy work. Some of its projects that caused significant impacts include:

- A survey on use of pesticides among fruit and vegetable farmers in 1989, that included medical professionals

- Participation in a review of the Pesticides Act in 1990.

- Research and monitoring of aerial spraying, and the preparation of a memorandum on the practice, which led to guidelines being adopted in 1993. The campaign elicited serious reactions from the affected parties, including pilots and others threatening to kill the campaigners. The Perak state government paid close attention to the matter, and the media gave good support on this issue.

- ERA Consumer and PAN AP undertook an integrated pest management project with rice farmers in the Sungai Buaya district in the state of Perak, with support from the FAO and the Perak state department of agriculture in 1994-5.[13]

The problem of paraquat's effects was part of the larger issue of problems with pesticides, food security, the heavy burden on women in agricultural societies and the oppressive conditions under which farmers and agricultural workers exist. These issues were given a face and a direction by surveys, studies and programmes undertaken by various citizens groups, at the local, regional and international levels. Some of these have been noted in the preceding pages.

A key initiative, spanning five years from 1991-95, was a seven-country case study by PAN AP on women's exposure to

pesticides. More than 2,500 farmers and agricultural workers, mostly women, were interviewed and the survey findings showed that:

- Most women farmers and agricultural workers spray pesticides or come in direct contact with pesticides in their work;
- Most are unaware of the adverse effects of pesticides;
- Pesticide applicators often cannot read labels or do not follow instructions;
- Users often do not use protective clothing because it is unsuitable for the climate, unavailable or too expensive;
- Farmers and agricultural workers in the region use highly toxic pesticides; and
- Most of those surveyed stated that they have been poisoned, citing acute effects like dizziness, muscular pain, sneezing, itching, skin burns, blisters, difficulty breathing, nausea, nail changing colour and sore eyes. [14]

There was the work of a lifetime to be done in each of the inter-locking issues that the surveys identified. The socio-cultural dimensions like women's role in agriculture and the lack of awareness of pesticide hazards and the low status of women all converged on the need for empowerment. In terms of hazards, in the case of Malaysia, the major factor was paraquat, because of its wide use in farming and plantation agriculture.

Victims Without Voice

Alongside the health problems of the sprayers, the social environment in which they operated pointed again and again to the disempowered position of women. This blight seemed to be at the root of the many injustices that weighed them

down, denying access to justice, a life free from harm and the opportunity to seek fulfilment and achieve their human potential.

These concerns prompted Irene Fernandez, who had already been devoting her energies to consumer, human rights and women's groups since the 1970s, to establish an organisation – Tenaganita – that would focus on protecting the rights of women and migrants, and create opportunities for them to achieve their full potential in society. It would be a force for women, as the name – which means "women's force" – implies. It seeks to grapple with the poverty that kept women and migrants trapped in a cycle of hopelessness and exploitation, especially in those plantations that have a bad track record in labour relations. Tenaganita seeks to end their disempowerment through positive interventions.

This then was the reference point for Irene's mission. Women and migrants not only had to know their rights and to assert them, they needed to have these rights recognised too. But unless they were able to create opportunities for themselves, they could not begin to see a better future, and this environment had to be changed. Witnessing the workers' predicament up close, Irene could determine that the process of subordination and disempowerment was acute and extensive. At home, there were the women's multi-dimensional roles in the family, the unrelieved pressures of a rudimentary life close to the edge, and the spousal abuse. At work, there were the occupational risks, the harassment and the control over their lives. Above this, the social climate was that of a community that was isolated, so exposure to the outside world was limited. It was ghetto living, and did not provide opportunities and therefore hope. There was a daily, inevitable routine, an endless cycle. So the idea was born of a force for women, who are a force themselves for change, to create opportunities and space to break this cycle. And the starting point was to address the environment of disempowerment.

When Irene set up Tenaganita in 1991 to do battle with these oppressive social conditions, it was the health problems

of women pesticide sprayers in the oil palm plantations of Selangor state, in central peninsular Malaysia, that provided a focal point for her social change agenda, and the trail soon led to paraquat.

The journey that Tenaganita took leading to the ban on paraquat began in 1992. In that year, the grassroots group began collaborating with the Pesticide Action Network Asia Pacific (PAN AP) which was leaving its host organisation, IOCU (now renamed Consumers International). PAN AP's work had grown dramatically in scope since its inauguration at a momentous conference in 1982 in Penang, Malaysia. From its early emphasis on the issues of safety and environmental impact grew an awareness that the fundamental problem lay in the high input model of agriculture itself. So, it now saw a need to focus its work on promoting sustainable, chemical-free and ecologically sound forms of agriculture while IOCU was looking to concentrate on core consumer concerns. PAN AP's long-time coordinator Sarojeni Rengam now took on the role of executive director of the separate entity, and seeking to ally itself with Tenaganita to connect with local level activism, invited Irene to be the chairperson of the newly registered organisation.

The two groups started their partnership with a survey of about 50 women pesticide sprayers in the Batang Berjuntai district in Selangor state, a tin mining and oil palm growing area in central Peninsular Malaysia. The area was chosen because it was the heart of a major workers empowerment programme run by Tenaganita.

The survey team embarked on a fact-finding mission, seeking to identify the kind of pesticides that were being used, whether the workers were sufficiently knowledgeable about the chemicals that they were handling, and the extent of acute poisoning that was occurring. And did they find some disturbing news.

Fifty-three-year-old Veena's testimony was among the many documented in the publication *Victims Without Voice* that emerged from the survey:

"I have been spraying pesticides for the past 20 years. I spray Gramoxone (paraquat) all the time. It is so strong that the odour makes me sick most of the time. In the beginning, I used to cry (tearing in my eyes from the strong fumes.) Now my main problem is nose bleed and chest pain. I also have bad stomach pain."

The sprayers showed a shocking nonchalance about pesticides despite their toxicity. At that time, spray gangs were entirely made up of women. They called paraquat by the colloquial name "kopi O", the familiar black coffee that is the breakfast drink of many. A common name for a poison that had a deadly effect on the sprayers' health.

The protective clothing provided by the plantation management was not used by the sprayers because it was too uncomfortable to wear in the hot weather, the survey confirmed.

"Most days, when we come back from work, we are soaked with the chemical, top to bottom …we are so used to it as we have been working with it for years. Of course the chemical burns our skin but we don't really bother as we have to work," Veena said.

About 90 per cent of those surveyed suffered from skin rashes, some 40 per cent had discoloured, irregular nails and suffered sore, red eyes, 10 per cent had coughs and generalised muscle aches and eight per cent experienced vomiting. [15]

"In one case, a sprayer had no menses for two years. Pesticides seemed to be the problem," said Irene. The activists took up the sprayer's case with the plantation management and got her a referral to the hospital, where she received treatment for her condition. The doctor advised a change of job, said Irene. "She gave up spraying and found that she was better."

Why were the workers so casual about the hazards of pesticides? Didn't they know that they were dealing with deadly poisons? Surely, anyone would think, the plantation management would take pains to ensure that a proper safety protocol was in place and functioning well; that managers, supervisors, storekeepers, sprayers all would be systematically

trained in the proper handling, use and disposal of such chemicals, that the plantation health service would be alert to potential poisonings and symptoms of chronic exposure; that a clear regimen of periodic health screening would be a matter of course for all workers who had to handle hazardous substances.

If only that were so. The plain fact is that training is a cost factor for the plantation companies. To begin with, most workers, being manual labourers, have poor literacy. (Some 80 per cent of the survey respondents said that they didn't know the harmful effects of the chemicals they were using.) Secondly, their lot in the plantation environment is a throwback to the cotton-picking days of the 19th century. The power structure in the plantation places the plantation worker at the bottom of a giant production machine, where the individual's basic rights are subsumed under a set up that is focused on constantly improving its bottom line.

The sum of all these disturbing questions is that, in the eyes of the plantation managements, the workers are just so many hands whose main purpose is to turn the wheel of the production machinery to churn out profits.

On the part of the pesticide industry, it's more of the same. All the fine sounding language that Syngenta uses in its public statements, such as product "stewardship", is a far cry from the realities workers experience on the ground.

Contrast its claim of responsible behaviour in a statement it made when responding to a critical report by Berne Declaration in April 2002, with the experience of participants in its local training activities.

"In the developing world, Syngenta has for many years run extensive stewardship programmes, teaching farmers and their families how to handle agricultural chemicals safely. These training programmes are often run in conjunction with government agencies or local associations and others interested in promoting safe practices amongst farming communities. Many such programmes, above and beyond those required by regulations, have been held in different regions

and countries in the developing world. These have included programmes which have taken place in Brazil, covering over 200,000 farmers in 2001, in Vietnam, with village based training schemes, in Malaysia, with smallholder training on safe use, in Guatemala, with train the trainer programmes, and in Costa Rica, with training for health care workers on the treatment of occupational incidents."

Now let us look at what really happens at these so-called training sessions.

Irene said: "After the Malaysian government announced its ban on paraquat, Syngenta invited Tenaganita for a discussion. It brought a doctor to the meeting who said that they had held over a thousand training programmes for the sprayers. This was strange, because sprayers who attended our awareness programmes said that they had not been to any training courses. So we don't know who were attending these training activities that Syngenta says it had held."

Then, after Tenaganita began its awareness campaign for sprayers and learnt that Syngenta was holding training programmes, the activists got the sprayers to attend the company-sponsored training activities to gauge the quality of the courses. "What the sprayers found was that there was very little discussion about the hazards associated with pesticides," said Irene. "They were shown how to use the safety equipment – things like 'This is the mask, these are goggles, boots, gloves and this is how to use them'. But the rest of the session was on a different track. 'You fall sick because you don't eat well,' is the message the trainer gave the sprayers. There was nothing said about the toxic effects of the pesticide. Then they talked about how to have a happy family. That kind of tells you that the training programmes for health were not meant to address the effects of the pesticide, but to move the attention away to the sprayers, making them responsible for not taking care of their health."

With such feedback from the participants, it is pertinent to ask whether assessments had been done on the usefulness of these training activities from the workers' point of view.

It could be surmised that Syngenta would not be keen to educate sprayers about the hazards inherent in paraquat since this would make them reluctant to continue handling the toxic chemical. Furthermore, training courses in this vein perpetuate the myth that paraquat can be used safely if only the sprayers pay attention to the safety precautions. So, the chemical companies can continue to produce and market the poison, all the while maintaining that safety education, stewardship and proper handling are all that are needed for paraquat to be used with perfect safety, completely ignoring the fact that it is impossible to apply these measures under tropical conditions. It could be seen therefore that the industry had developed a strategy of blaming the workers for not looking after their health, and neglecting their living conditions so as to divert attention from the harm caused by their product. Ironically, the poor health that the industry's representatives harp on actually aggravate the hazards of the workers' exposure to pesticides.

For plantation managements too, consciousness about workers' rights, equality and concern for human dignity are potentially problematic ideas if the workers got them into their heads. Managements would not be keen on exposing workers to these messages because they would become likely to question any practices that they found to be a burden.

Quite simply, awareness of human rights does not thrive in a situation that revolves around cheap labour. There is a job to be done and targets to be met, and anyone who thinks that it is dangerous or burdensome can take his or her concerns elsewhere, as far as the supervisor leading the sprayers' gang is concerned. Plantation managements and owners on their part are silent about the human rights issues that should be raised. The question that must be asked of them therefore is whether they have shown the expected duty of care to the sprayers to ensure that they are in reality protected from harm in their daily work.

Given such a work environment, complaints of fatigue, giddiness, nausea, headaches or other discomforts that are

difficult to link irrefutably to spraying would be frowned upon as the wily tricks of shirkers that should be discouraged with a rebuke. Furthermore, the workers themselves become inured to such apparently minor difficulties. The thinking is that a labourer's life is one of hardship anyway, so problems must be borne stoically, silently.

Human rights? That's the work of trouble-makers who can expect stern punishment from the management. Better keep your head down and do what you're told, or even the RM14 (USD3.84) that you sweat for daily will slip away.

So Tenaganita's first awareness campaign carried out among pesticide sprayers in oil palm plantations in the Batang Berjuntai district of Selangor state in central peninsular Malaysia brought a new light to the sprayers' situation. As understanding dawned among the women about the harm that they were being exposed to daily at work, many of them gave up spraying. For most of them, this was the first time that anyone had spoken about pesticide safety and sought to identify symptoms of poisoning among them.

Irene provides a graphic description of the workers' health symptoms: "The women's health was really bad. You could see that their eyes were drawn in, which is a tell-tale sign of poor health. You could see them losing weight. They said that they had no appetite to eat when they returned to their homes after working on the plantation. They had a lot of reproductive problems, but they were not talking about them. For example, only when we began to ask them probing questions about their reproductive health did they provide information about the kind of problems that they were experiencing. I knew from interacting with the women that they talked among themselves about continuous vaginal problems. And this is because after spraying, their clothes become soaked in the pesticide, so the skin, including in the genital area, is prone to itch. When they urinate, they tend to scratch the area and infections occur. And this goes on continuously, so there is a recurrence of the problems."

Apart from these symptoms experienced by the sprayers,

there were other problems that were even more disturbing. Unfortunately, these occurrences, which included congential problems, could only be noted, but their connection with pesticide spraying on the plantations was beyond the scope of the survey team.

"In the Teluk Intan district, when we were doing intensive monitoring among the pesticide sprayers on the plantations, we came across at least two families which had children with mental retardation," said Irene. "We asked the mothers of these children whether they were spraying when they were pregnant, and they said 'yes'. But because there had been no systematic monitoring and study to establish whether the sprayers' exposure to pesticides was responsible for their children's interrupted development, it was difficult for us to say that their children's problems were connected to pesticides. We also found sprayers who were breastfeeding their children under conditions that could result in the children ingesting pesticides.

"And that made me very, very angry. It was horrible that the sprayers were given so little information. And then there were the women sprayers, who at 40 years or so, were having severe back problems, looking so aged, because they had been carrying the back pack spraying equipment."

Irene and her team learnt that a number of the women sprayers who took part in Tenaganita's survey, particularly in Teluk Intan district in Perak state, plantations in Kedah state and in Batang Berjuntai district in Selangor state, had prolapsed wombs. Though their problems were very real, and occupational conditions could well be implicated, the lack of empirical studies however prevented correlations from being drawn between the two.

"They just said this is 'very difficult work' and that was all to it," said Irene. "As workers they had no choice but to do this job. They were resigned to it."

"We asked: 'Why do you keep on spraying?' and their answers were: One, sprayers get to come home an hour earlier than other workers (to wash up after spraying) and so they

were able to use some of this time to do the housework or see to the children. So there is the gender element at play – the women having to nurture the family in addition to providing an income for the household," said Irene. "The second reason was that the union had got the sprayers 50 sen (about US 13 cents) extra each day because it was a high risk job. And that really made me very angry because, what was 50 sen a day when the effects of pesticides on the sprayers' health were irreversible?" said Irene.

The Serdang Declaration

The findings of the survey among pesticide sprayers in plantations in the Batang Berjuntai district showed that a concerted push was needed to bring the perils faced by the sprayers to the attention of concerned parties. A consultation was called by PAN AP with various organisations and agencies in June 1991, at the end of which, the Serdang Declaration was adopted.

The Serdang Declaration drew attention to the pesticide poisoning suffered by women pesticide sprayers, the hazardous conditions under which the chemicals are used, the promotional pressure to use agro-chemicals, and the violations of the FAO code of conduct dealing with pesticides.

It noted that reliable information on pesticide hazards was lacking, or biased and that consumers lacked information on pesticides to which they were being exposed. Also, that viable alternatives to pesticides are available.

Among its recommendations were:

- Measures to create the political will to control pesticide use, including a legislative review, enhanced administrative control, the banning of highly hazardous pesticides, and a ban on paraquat, specifically.
- Measures to protect workers' lives, enhance monitoring, address the lack of health services and provide information to consumers

(Insert Picture – Picture No.3
WomenBackpack Sprayer
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A four-gallon knapsack spray tank which sprayers use for spraying paraquat.

- A call to trade unions to take up the issue of pesticides as a major concern, and
- For women's and other citizens groups to wake up to the daily poisoning of women workers and farmers.[16]

The concerns articulated in the Serdang Declaration, and the recommendations it enshrines are really all that conscientious persons, groups and institutions need to start a transformation towards an agricultural system and a society that values human lives before profits, that embraces a harmonious, humane and wholesome economic and social system and that can prevent the needless harm that is being perpetrated on an escalating scale on agricultural workers, farmers and the environment to this day. The fact that the problems it identifies are nowhere near being addressed over 15 years after its adoption shows that our society has not been receptive to the warnings about its self-destructive ways, and is largely heedless to the cruelties that are being perpetrated on our fellow beings in the name of prosperity and well-being.

In any case, the patent hazards of paraquat use were laid out in public view at the launching of *Victims Without Voice,* and the campaigners called for its ban.

Poisoned and Silenced

The next stage of Tenaganita's pesticide work involved undertaking a campaign on plantations in Carey Island and in the Elimina Estate in Selangor state, in central Peninsular Malaysia. The initial response that the campaigners received from pesticide sprayers there caught them by surprise. "We found that the women were resistant to our messages," Irene said. The reason became clear after the sprayers got to know the campaigners better. "We learnt that eight or nine years earlier, the Consumers Association of Penang (CAP) had held a campaign with the workers, which resulted in huge publicity in the media. CAP had produced a short video, *Silent Killer,* which created a sensation about the problems created by pesticides. As a result, a number of women sprayers had

lost their jobs, and so those whom we approached feared the same fate." In the light of this experience, it was clear that a different path needed to be taken.

"Following that," said Irene, "we continued with our outreach work and the women sprayers were sent for health scans, especially those with chronic diseases like nerve problems. This led us to discover that paraquat users suffered adverse effects to the nervous system. Some of those victims are receiving treatment till today, through the Social Security Organisation (Socso). We were then able to educate the workers about this problem."

In the meantime, from 1994-95, through the experiences gathered from the pesticide sprayers in plantations, PAN AP began to see the need to undertake systematic monitoring of paraquat use and its problems. A series of meetings was held with grassroots groups from Indonesia, Gita Pertiwi, from the Philippines, the Munoz Community-based Health Program and PAN Philippines and, Tenaganita, to undertake a community-based monitoring programme. Modules were developed for plantation workers. This was aimed at introducing awareness about pesticide hazards among workers, addressing the need for systematic data collection on the effects of pesticides, and to teach these communities how to organise themselves for self-help. Together with the National Poison Centre based at the Science University of Malaysia, the issue was discussed, and in 1996-97, a methodology focusing on participatory research was developed.

This method of data collection had a number of inherent advantages. Firstly, it gave the workers power over their situation, because they were introduced to self-monitoring, and so became more aware of what the pesticide was doing to their health. It also gave them knowledge about the substances they were handling at work, instead of being passive recipients of economic inputs. In the process, the participants' self-worth improved as they were put in control of the monitoring process. It also fostered discussion among participants, encouraging the sharing of experiences, improving access to information

and providing emotional support as well. All these interactions contribute to the awakening of workers, and the awareness of their entitlements and basic rights.

In 1998, PAN AP produced the *Community-Pesticide Action Kit (C-PAK) Breaking the Silence! Plantations and Pesticides* that was used to introduce self-monitoring among the plantation workers.

"From 1997-99, we identified over 100 women working in plantations in Kedah, Perak and Selangor for the project," said Irene. "The workers in Kedah also submitted to blood tests. This study led to the publication of *Poisoned and Silenced* in 2002. Documentation took longer than expected because the blood samples had to be sent for retesting. There was a need for a common agreement with the National Poison Centre on analysis. From the results it became clear that of all pesticides, paraquat was the problem in 70% of the cases."

The findings of the study constituted a compelling criticism of the existing situation. The laws that were meant to ensure the safety of sprayers were not quite successful in dealing with the issue. And although women undertook activities such as mixing, handling and spraying pesticides, the plantation managements had not attended to their problems. The sprayers complained of poor maintenance and leaks in the spraying equipment, and poor medical care and first aid facilities on the plantation. Even when protective equipment was provided, sprayers did not use them because the hot and humid conditions made their use very uncomfortable. Sprayers did not practise common hygiene such as washing their hands before meals, or washing their clothes after spraying since there was no source of water for these purposes in the fields. The symptoms suffered by the sprayers indicated exposure to organophosphate and carbamate pesticides, and blood samples revealed a depression in the acetyl cholinesterase enzyme activity, which is confirmation of pesticide poisoning. [17]

Malaysia Bans Paraquat

The *Poisoned and Silenced* study had its intended effect. Finally,

the authorities had seen enough and all the hard work of civil society groups advocating workers' safety over two decades had paid off. On August 27, 2002, the government banned paraquat via a circular from the Pesticide Control Division of the Agriculture Department (and endorsed by the Secretary of Malaysia's Pesticides Control Board).

The circular, effective immediately, stated that:

- new applications to register or re-register paraquat would be rejected,
- all applications to register or re-register paraquat that were currently being processed would be stopped,
- all previously registered products were to be phased out in stages, and
- all new applications to advertise paraquat products would not be entertained, and all applications currently under consideration for approval will be stopped. [18]

It had taken 17 years of campaigning by activists in Malaysia and from around the globe to stop paraquat. "Of course we were elated," Irene recalled. "Since it was also a regional programme, we shared information with Sri Lanka and Indonesia that paraquat should be taken more seriously, and be banned."

The Empire Strikes Back

"The reaction from Syngenta to the Malaysian ban was to put pressure on the palm oil industry, which reacted strongly," said Irene. "The MPOA and MAPA lobbied for a review of the ban. The ban itself had a weakness because it gave three years' grace to the industry to exhaust stocks. In 2005, there was to be a total ban, and it would not be re-registered. But there was a concern, a fear that the government may backtrack on its decision." Her fears, unfortunately, have proven to be true.

In Basel, Switzerland, Syngenta put out a press release on September 30, 2002 expressing surprise at the ban. It said the industry and user groups were not consulted, as if the intense

public debate that had been raging for years and the public statements of government ministers and officials had not taken place. The lobbying machine had started to roll. "At all times Syngenta takes safety concerns very seriously," the statement read. "Consequently Syngenta is in the process of making contact with the (Agriculture) Ministry and (Pesticides) Board to learn about and understand the basis on which the decision was taken. We shall then work with the Malaysian Government to rapidly address any safety concerns but also to provide independent evidence of paraquat regarding its cost-effectiveness and safety."

Ignoring the sheer impracticality of using protective gear in a tropical environment, the statement blithely said: "In over 40 years of use in Malaysia, there has not been a single fatality recorded when paraquat has been used for its intended purpose and as recommended on its label."[19]

As the language of the statement shows, the standard tactics that are designed to show great concern for safety were being used to camouflage the problems associated to paraquat. So the company would seek to have a 'dialogue' with the authorities to try and 'understand' the reasons for the ban. And it would 'demonstrate' how safe the product was and 'prove' its 'track record'. All these steps would then create room for the product to be retained on the market for another few years, a decade or even longer, if Syngenta had its way. And while this 'dialogue' was in progress, it would be convenient to propose an additional 'scientific' study to establish some further 'evidence' to settle any 'doubts'. And as everyone knows, this process can be dragged on for as long as the stakeholders can manage to keep it going.

There was more to come. Irene recalled: "For the last three years, it has been a major battle. The commercial interests have engaged in an intensive campaign to get the Pesticides Board to review the ban. So, some months after the ban was announced, the Health Ministry called all agencies and departments for a meeting to hear their views. At the meeting with the Deputy Health Minister Datuk M. Sothinathan, the

Chemistry Department, National Poison Centre, industry representatives, NUPW and hospital assistants union. Tenaganita was sitting with the government departments in a battle against the rest."

"Tenaganita brought pesticide sprayers to the meeting and told them to speak about their experiences with paraquat, and they gave a convincing account of themselves," she said. "The deputy health minister himself was convinced. The industry representatives were speaking about protective clothing, which is really not effective. So the sprayers asked, 'Can the industry control wind direction?' – and they had no answer."

But no matter how clear the evidence is, no matter how many quarters are convinced, decisions can change at the political level. Indeed, this has been Irene's experience: "And of course it is astonishing what the final outcome is, after consultations. Because I've sat at the Pesticides Board meeting, I sat with the ministry of health meeting, where both departments were asked to give their opinion whether the ban should stay. The chemistry department said yes, health department said yes, the National Poison Centre said yes, and academicians who had done research said yes, because it is a very hazardous pesticide. So where the independent agencies are concerned it is very clear that paraquat is too harmful, but where the politician is concerned, then the reasoning changes, if there is any reasoning." This was to be seen in the latest development to date, namely, the re-registration of paraquat from November 2006.

Another important aspect of the paraquat safety issue which is grossly under-emphasised is the great difficulty in establishing medical data on pesticide poisonings due to the lack of a reporting system that specifically charts the incidence of acute and chronic exposure to pesticides. "Doctors and hospital assistants are not trained to detect pesticide poisonings, so on what basis does the industry argue that paraquat is safe to use? Do they have the data on its use in actual plantations in hot climates which can back such a claim?" Irene asked.

Union in the Dock

When pesticide sprayers have needed assistance to seek further treatment for the health problems arising from their job, they have sometimes turned to their local union representatives for help. Some workers have reported good experiences with their union leaders, while others have not.

Union representation on occupational safety issues at the apex level is another matter. The most visible of the agricultural workers unions, the National Union of Plantation Workers (NUPW), has engaged with agencies like the Department of Occupational Safety and Health and Pesticides Board for a long time. But while the union's stance on workers' safety is clear, some positions that it has taken, have been perplexing, such as in the following instance.

"When the Pesticides Board had its first meeting after the ban," Irene said, "we were shocked when the secretary of the Pesticides Control Division asked the union (NUPW) why it had written to the board to repeal the ban. Unfortunately the two representatives from the union were not the top people. They said something about the union promoting safety always, but they could not really answer the question."

"To our minds," said Irene, "the union cannot take a stand against Syngenta because the union's monthly newsletter, *Sangamani,* carries a half-page message sponsored by Syngenta on safety, for which the company contributes RM10,000 (about USD2,700) annually. That's part of the problem, I think. I cannot see any other reason."

A pertinent question then is why the NUPW wrote to the Pesticides Board arguing against the ban on paraquat. NUPW's national executive secretary A. Navamukundan answered in an interview with the authors: "NUPW was not against the ban, in as much as to ask 'Is it safe?' We were not compromising safety. I think Syngenta's view was: safety has not been compromised. Our view was: safety cannot be compromised. That is the view that we had presented."

That puts a fine point to it, to say the least, and still the burning question – why would the union be against the ban on

paraquat – has remained unanswered. Navamukundan, on his part, was quite plain that the union took a practical approach to the chemical industry, or was it a line of lesser resistance?

"I can tell you something," said the unionist. "We've looked at the possibility of the 'ban all pesticides' position. If you say, 'Look, I don't want to listen to the industry', it is pretending that an elephant standing beside me doesn't exist."

Was the union happy with the ban? Let's hear the unionist's take on that:

"If you've got a substitute for paraquat, go ahead with the ban …Globally, all these multinationals have their own agenda. If they can kill one product, then there's another market for something else that they may have in the kitty. As a union, we don't want to get involved in their market wars. …Sodium arsenite was technically less poisonous than paraquat, its LD_{50} was lower. But it caused environmental problems. So they killed sodium arsenite and brought in paraquat. …From the day paraquat was introduced, the company should have said, this is a very, very dangerous chemical. …"

To ensure a safe working environment for plantation workers, said Navamukundan, the NUPW had worked with the ministry of human resources to develop a safety protocol for workers who undergo occupational exposure to hazardous substances. "There's an on-going exercise to monitor the application and marketing of hazardous chemicals. The union's view has been that pesticides should be sold like pharmaceuticals. Purchasers must be registered and the amount bought must be recorded," said Navamukundan.

However, Irene was not impressed with the union's effectiveness in protecting the workers' interests. "If you look at the plantation community, it is one of the most backward in the country. They don't even have a decent wage. The battle for a monthly wage took such a long time, and still it's a very grey area. They have a union which is so pro-industry. For example, during the negotiations for the collective agreement with MAPA about two or three years ago, the union negotiators were ready to forgo the monthly wage in return for direct

deduction of the union fees from the workers' salaries. Then there's no question of not paying union fees, it's automatically deducted."

A Global Alliance of Hope

From the signals sent out by plantations, the agro-chemical industry, government officials and people in the field, it was clear that the Malaysian authorities needed to be reminded about the strong feelings of citizens groups on the grave hazards of paraquat. PAN AP gave this groundswell a direction by initiating a letter-writing drive targeted at the Malaysian Prime Minister, the Minister of Agriculture and the Pesticides Board. PAN AP allies around the world who got wind of the ban lent their weight to its message, sending letters to the Malaysian authorities congratulating them on the decision to deregister paraquat.

Much was already in progress on the international scene in the campaign against paraquat. A campaign update issued on Dec 4, 2002 by Francois Meienberg of Berne Declaration details some of these activities:

- A telling report Paraquat – Syngenta's Controversial Herbicide had been translated into Spanish and made available on its website.

- An oil palm plantation in Ghana which produces palm oil without herbicides received the World Business Award at the World Summit on Sustainable Development in Johannesburg.

- Berne Declaration had produced a short report in German about alternatives to paraquat use in banana and coffee plantations.

- Coalition partners were urged view at the PAN UK website a model letter of support encouraging the Malaysian government to maintain its ban on paraquat.

- An e-mail campaign urging Syngenta to stop the production of paraquat had been launched on September 18, 2002. Links were available for versions in Spanish, German, Italian, French and English. At that point 659 e-mails had been sent to Mr. Imhof of Syngenta. Each received a reply from the company. In Costa Rica and the French part of Switzerland, signatures had been collected for the petition.

- On World Food Day, October 16, Berne Declaration and Bio Suisse, the Swiss association of organic farmers published a brochure about paraquat in German.

- The Independent Plantation Workers Union of Sumatra made a IUF (International Union of Food, Agricultural, Hotel Restaurant, Catering, Tobacco and Allied Workers Association) documentary about globalisation, that contain two powerful sections about Gramoxone. The audiences of labour educators and union activists tend to be "particularly outraged by the paraquat situation".

- The WHO's First World Report on Violence and Health published in September 2002 points to "evidence of a reduction in suicide rates when other toxic substances are controlled, for example pesticides, which are widely disseminated in the rural areas of many developing countries." This is underlined by an impressive graphic about the paraquat suicides in Samoa.

- At a panel discussion between Syngenta and Berne Declaration in Basel, Switzerland, the company asked the NGO coalition to organise a meeting about paraquat. But after dates are proposed and the agenda is asked for there is no response. No such meeting has taken place.

- In November 2002, PANUPS reports on the poisoning of 153 textile workers in the Dominican Republic when paraquat was sprayed on nearby grounds.

- In November 2002, a member of the Swiss parliament seeks clarification on the reason for the Swiss ban on paraquat in 1989. The government response was that it was due to its high toxicity, especially if misused. It also said it would support efforts to add paraquat to Annex III of the Rotterdam Convention on prior informed consent for the export of hazardous chemicals, to protect developing countries from the harmful consequences of this highly toxic pesticide.
- The Swedish Society for Nature Conservation was lobbying for a ban of paraquat by the European Commission's Standing Committee on the Food Chain and Animal Health.[20]

Meienberg had another piece of good news for the campaigners. In July 2002, the Forest Stewardship Council revised its international policy to include paraquat among 39 pesticides that were banned to its certified members due to its toxicity and persistence. That was one more gain against a deadly poison. [21]

PAN North America joined in to support the public campaign urging the Malaysian government to maintain the ban, carrying an article in the April 2003 issue of its *Global Pesticide Campaigner* urging readers to fax letters in support of the ban to the prime minister, his deputy and the Agriculture Minister. [22]

Industry Lobbies the Government

While all these developments were taking place in the enlightened circles of citizen activism globally, Syngenta was already working on the Malaysian government, media and on public opinion to reverse the ban. Jennifer Mourin, PAN AP's energetic campaigns and programmes coordinator, captured the goings-on at the Agriculture Ministry's offices following the announcement of the ban in a letter to Francois Meienberg and Bernhard Herold of Berne Declaration in January 2003, mobilising international support to urge Malaysia to keep paraquat out:

"Just after the decision was made public, we were informed that Syngenta Malaysia Ltd. representatives had made visits

to government officials about the ban. Articles then appeared in our local papers supporting paraquat as "Safe to Use in Agriculture", and calling for a repeal of the Ban and Phase Out.

"But because the Board has held firm to the decision, we have learnt that the industry has now approached the political leadership, at the highest echelons, within the Malaysian government!" [23]

At the time Malaysia announced the ban, Jennifer noted, Syngenta was promoting a book *Paraquat – A Unique Contributor to Agriculture and Sustainable Development',* by Prasanna Srinivasan, (New Delhi, November 2003) extolling paraquat's benefits for farmers. "They had a huge launch, and invited the Ministry of Agriculture and everyone in the sector. At the same time, the book was also launched in Latin America." It was not about to give up on its profitable poison, not by a long shot.

Irene continued: "We began to see that Syngenta had formed a coalition that included the palm oil association, oil palm smallholders and the union. With the giants coming together to lobby the government, that was a major concern for us."

Clearly, the industry lobby was trying everything in its book to thwart the ban. Another industry tactic is the pseudo-scientific review of survey findings. Irene recounted their strategy: "When *Poisoned and Silenced* was produced, Syngenta refuted the study. They said that it was not scientific. They said that we had not proven a direct correlation between paraquat and the health problems that the women were experiencing. They said that the cholinesterase study (showing reduced levels of the enzyme in the bloodstream of sprayers) was questionable. And they went so far as to accuse the government of being influenced by an NGO."

The industry coalitions, including the Malaysian Crop Care and Public Health Association (MCPA) weighed in with the standard spin, such as a letter entitled "Paraquat is Safe to Use in Agriculture" published in the *Star* daily on October 1, 2002.

A favourite tune of the industry lobby is that paraquat

is cost-effective. However, the reality is that there are cheaper alternatives, but the manufacturers' interests are in perpetuating paraquat's lease of life. The argument that paraquat costs less is attacked in a letter by a reader Shamsul Azahari published in *theSun* daily on June 19, 2003. Commenting on a panel discussion on the *ntv7* station, in which representatives of the planting industry called for the ban on paraquat to be revoked, he refutes their argument that the ban would cost the industry more than RM2.7 billion over 10 years in higher production costs.

"They were wrong to quote that paraquat costs RM12 per litre. A more realistic price is RM14 per litre and the 700,000 smallholders are more likely to have to pay RM16 to RM18 per litre."

…"Today, products such as glyphosate, Basta and Amine, to name a few, have generally replaced paraquat and they cost much less to use."

Another important point the reader made concerned the false analogy used by the planters that agriculturally advanced countries allowed the use of paraquat, so Malaysia should reconsider its ban. "What the panellists did not state was that in all the countries mentioned, especially in the advanced nations, very strict rules and regulations govern the manufacture, transport, storage, application, disposal of containers, medical checks, demarcation of sprayed areas, recording, etc in relation to any paraquat product.

"In other words, the current free and easy way as is practised in Malaysia would be completely taboo and would definitely not be allowed."[24]

In a report entitled "Reconsider paraquat ban, group urges govt" by Anna Maria in the *New Straits Times*, industry groups raised the following points:

- Consequences of the ban will hurt local players more than their foreign counterparts that are based here;

- 34 per cent of MCPA's 36 members are paraquat-based crop care product manufacturers

- About 86 per cent of its members comprise local pesticide producers

- The new regulation could also stunt any future investments from this particular sector

- Aside from manufacturers, others appealing against the ban are Malaysian Estate Owners Association, National Association of Small-holders and the Malaysian Palm Oil Association

- 3,000 plantations and over 500,000 small-holders in all crop sectors nationwide use herbicides containing paraquat.

Sarojeni sent a pointed rebuttal to the letter in the *Star,* showing up fallacies in MCPA chairman Lim Jung Lee's arguments. Noting that Malaysia was the first Asian country to ban paraquat, and that in view of the severe poisonings in workers, the ban was in fact long overdue, she said, among other things:

- "In 2000, researchers from the UK Centre for Tropical Medicine based in Oxford, published an overview of the major public health problems of pesticides as a result of both accidental and intentional exposure. They found that paraquat has been reported to be a problem in many parts of the world.
- Plantation workers have a high degree of exposure to paraquat because of prolonged contact with the chemical during spraying.

- Effects due to high acute exposure to paraquat may include excitability and lung congestion, which in some cases leads to convulsions, incoordination, and death by respiratory failure. Other toxic effects which include thirst, shortness of breath, rapid heart rate, kidney failure, lung sores, and liver injury were noted by the Pesticide Information Project of Cooperative Extension Offices of US based Cornell University, Oregon State University, University of Idaho,

University of California at Davis and the Institute for Environmental Toxicology, and Michigan State University – as far back as 1996.

- A study of 126 workers on fruit farms in the Western Cape area of South Africa used a new test for measuring respiratory effects on the lungs of workers with long-term exposure to paraquat. The study, published in 'Occupational Environmental Medicine' in 1999, eliminated confounding factors such as smoking history, alcohol consumption, age, weight, and height. It found that the lung capacity of workers exposed to paraquat was consistently 10-15 per cent lower than a reference population as demonstrated by decreased arterial oxygen uptake during exercise.

- The European Commission's Scientific Committee of Plants said in December 2001 that a more detailed appraisal "on the likely effects of paraquat on the rate of degradation of organic matter in soil" should be provided.

- A two-year study by PAN AP, Tenaganita and the National Poison Centre to monitor pesticides use in plantations in March 2002 found that the major pesticide used in the plantations is paraquat. Poisoning due to paraquat is clearly demonstrated in the surveys and interviews with workers, and indicated in the medical examinations. [25]

Feting the Media

The industry alliance also sought to win the support of the media. A report in the IPS news service recounts Syngenta's lobbying effort soon after the ban was announced in 2002:

"The firm's Malaysian arm, Syngenta Crop Protection Sdn Bhd, feted journalists to a five-star hotel dinner in Penang after holding a briefing on the benefits of using paraquat. Also present was the chairman of the Malaysian Crop Care and Public Health Association, which represents the agrochemical industry.

During the briefing, Syngenta Crop Protection's general manager, John McGillivray, famously described paraquat as a 'dream product' even as, unbeknown to him, a young man lay dying in hospital in Kuala Lumpur in another paraquat suicide case."[26]

The discussion turned out to be a presentation on paraquat instead. During question time, Syngenta's representatives realised that those who were well informed about the safety concerns surrounding paraquat had not bought their pitch, and brought the session to a premature end. In response to the event, PAN AP released a press statement on the ethical issues posed by Syngenta's courting of the media. Jennifer noted that press coverage of PAN AP statements fell off after the so-called discussion.[27]

The Tamil language press was also targeted. On October 9, 2002, the *Malaysian Nanban* daily carried a report of a dialogue of Syngenta officials with its employees. Syngenta was represented by Dr Balasubramaniam who held out the view that any pesticide wrongly used is poisonous. He said that any victim of paraquat poisoning can be saved if immediate action by giving a mixture of clay and clean water. This would induce vomiting, he said. Balasubramaniam maintained that paraquat will not penetrate through the skin. This was part of a campaign of roadshows and workshops on the handling of paraquat with NUPW.

The newspaper unfortunately had carried these inaccurate views without adequately verifying the claims with independent researchers. For example, the impression that paraquat victims could be saved if the patients are made to swallow a mixture of clay and water does not give the real picture since there in no antidote for the poison. This position elicited a response from the Consumers Association of Klang, which wrote to Syngenta Crop Protection on November 21, 2002 asking it to explain how it could ignore the body of well-proven facts about paraquat usage, the positions of international organisations and findings of renowned universities. It also criticised the company for downplaying the health hazards of

paraquat exposure. The association regretted that Syngenta had embarked on a road show to market paraquat, and so challenging the decision of Malaysia's elected government to ban the substance. [28]

Pro-industry Rhetoric

One facetious argument forwarded by proponents of the industry position is the risk-benefit analogy. A good example was seen at the Pesticides in Perspective conference organised by the Malaysian Agricultural Research and Development Institute (MARDI) in Kuala Lumpur from July 6-8, 2005. In a paper entitled "Social and health impact of pesticides in perspective", M.B. Strong, a consultant in health, safety and environment protection, based in Australia argued: "Farmers and chemical suppliers are the primary recipient of the direct benefits of pesticide use and this influences their acceptable level of risk. A risk threshold should be determined by regulators in an ideal world. People struggling to survive difficult social conditions often are being asked to meet standards of more affluent communities and exposure to pesticides has been used as a scapegoat for all that is not right in society."

Strong uses the *Poisoned and Silenced* study as an example of an emotional assessment of the risk that the agricultural workers are exposed to, and implies that the authors of the study seem to have made up their minds before the study that paraquat should be banned. In a curious display of pseudo-logic he admits that the working conditions described in the study would be outrageous for Australians. Yet he does not extend the same right to a safe working environment to workers in Malaysia. For them, supposedly, a risk-benefit analysis is sufficient!

"This *(Poisoned and Silenced)* is a classic example of the outrage component of the risk equation being dominant in the evaluation of a study," he offers. "The outrage was heightened by the general conditions under which the women in the study were expected to live and work. They were exposed to violence,

poor nutrition, poor hygiene and a great deal of heavy physical work both whilst in the plantations of Malaysia and perhaps when managing the home as well. On top of these the women spent their working day spraying pesticides.

"From an Australian perspective it would seem quite right to be outraged by the conditions under which the women were expected to live and work. The workplace practices, as an outsider looking into the plantations through the eyes of the writers of the report on the study, leave a lot to be desired.

"Where I depart from the study authors is in how they interpret the impact that the work with pesticides has on the general health of the women interviewed. Certainly the plasma pseudo-cholinesterase activity levels in a sample of women in the study suggested exposure to either organophosphate (OP) or carbamate insecticides but this measure is not always a clear indicator of the onset of clinical symptoms because of the sensitivity of the test.

"Again I would depart from the authors when they call for the complete restriction (ban) of certain pesticides as a first point of conclusion. Indeed a call to ban paraquat must have been in the mind of the authors even before the study was commenced because there is no evidence in the study to support such a call. A premise for the authors may have been that there were no benefits to the plantation operation, or to the employees, to be derived from their use of the pesticides. Such an entrenched position suggests that a greater effort by the pesticide industry is in order to demonstrate the benefits that pesticide use offers society."

The author of the paper then suggests that the outrage felt by the writers of *Poisoned and Silenced* may be reduced (sic) "so that a sober appraisal of the hazards associated with pesticide use can be made, some improvement in living conditions of the sample population, achieved by addressing one of the other elements of lifestyle (nutrition or hygiene for example) would need to be undertaken." [29]

Strong's attitude to workers in a developing-country environment is offensive, to say the least. Furthermore, the

views he espouses are ironical for someone who describes himself as a consultant on health, safety and the environment. Indeed, his paper demonstrates how the safety concerns about paraquat are buried under an attack on the supposed lack of objectivity of the authors of the *Poisoned and Silenced* study. In this way, the entire body of evidence that has been built up through studies all around the world showing the harm caused by the herbicide is brushed aside. In its place, lifestyle issues such as nutrition or hygiene are played on, to divert attention from the inherently toxic qualities of the chemical substance. In fact, poor nutrition and hygiene due to lack of proper facilities can actually compound or exacerbate the effects of poisons like pesticides on the workers' health. Nor is there any attempt in the paper to show how the product can be safely used in the tropics where the use of the prescribed protective gear is impractical. Indeed, it is pertinent to note that the WHO has recommended the banning of chemical substances where the conditions of use do not permit their safe use. This factor is also one of two criteria for substances to be included in the prior informed consent process under the Rotterdam Convention governing the export of hazardous substances. The other criterion is that the chemical in question must have been banned or severely restricted in two regions.

It is incredible that the paper writer can shamelessly propose that working conditions that are unacceptable for Australians can be foisted in terms of purported benefits to Third World economies. It is an argument that is sorely lacking in logic. So the game continues, and every conceivable method is employed to stall the inevitable conclusion that paraquat must go.

The Debate in Parliament

Winning the support of Malaysia's parliamentary representatives was no easy feat either, especially in view of the government's emphasis on developing the agricultural sector as a major pillar of the economy. Given this premise, cost-effectiveness has been a paramount concern, instead of safety or even lives.

This was well illustrated during a debate on paraquat in the parliament on November 15, 2005. Datuk Haji Mohd. Said bin Yusof (the member for the Jasin constituency in Malacca state) said: "Today, many farmers complain that farming costs in the country are very high. For this reason, many of the flower growers of Cameron Highlands have shifted to Vietnam to grow flowers, which are exported even to Japan. … "I don't understand why in the last two or three years, the Agriculture Ministry had banned the use of paraquat, whereas developed nations like the US, Taiwan* and others have not banned paraquat. And paraquat has been used by our villagers for a long time to control weeds. I hope it is not because it is known that paraquat is a poison and because two or three persons had swallowed it and died, the Agriculture Ministry takes the drastic step of banning paraquat. Paraquat is a contact poison, the moment it touches the plant, it dies and it's cheap. Today, we have to substitute with a poison that enters the roots, it has a high cost. It is expensive! For this reason, today we see our farmers and others being forced to use the absorbent poison as an alternative to paraquat and incurring very high costs. Today, we see much of the paraquat sold in this country is smuggled in from Thailand because Thailand has not banned it."[30]

* Taiwan has since restricted the use of paraquat.

Such a blatant plug for paraquat is not at all consistent with the role of a parliamentarian. Furthermore, the lopsided argument in favour of cost-effectiveness without any acknowledgement of the hazards associated with the weedicide raises questions about whether the elected representative is prepared to consider the consequences of paraquat's use on people's health when he chooses to advocate for the lifting of the ban. Given this situation, the electorate would need to be deeply concerned about the role played by their representatives in safeguarding the public interest. But perhaps the most damaging testimony of the representative's questionable outlook is his further comment that villagers in his constituency had discovered that a mixture of paraquat

and the food seasoning monosodium glutamate makes the herbicide even more effective in weed control.

Another representative Datuk Haji Wan Junaidi bin Tuanku Jaafar (the member for the Santubong constituency in Sarawak state) revealed during the same question and answer session that oil palm plantations in his state were reluctant to incorporate cattle rearing in their plantations because they feared that the cattle would be poisoned by the pesticides that were used.[31] This showed the concern over the environmental hazards posed.

A memorandum sent by Tenaganita to the Malaysian prime minister, ministers of agriculture, health and human resources and all members of parliament (MPs) in April 2005, urging for the ban on paraquat that was imposed in August 2002 to be retained captures the situation aptly: "During the July 2004 seating of Parliament, MPs like Dr. Dawos Mamit of Mambong and MP from Cameron Highlands, K. Devamany stated: 'If we do not find an alternative soon for the overuse of pesticides, legal or otherwise, in the highlands, it will lead to the chemical poisoning of the environment.' Dr. Mamit gave a long speech explaining in detail the hazards of chemicals and how they can affect the brain, leading to mental retardation. The scientific explanations helped to convince the MPs on the need for stricter control in the use of pesticides under the Pesticides Act, whereas the main principle of the act was to protect human life and the environment. But the Minister of Agriculture does not seem to recognize the sciences of poisons and chemicals when he called for the review of the ban." [32]

Perhaps the clearest position in favour of the precautionary principle in the regulation of chemicals as toxic as paraquat was taken by the member of parliament for the Bukit Mertajam constituency Chong Eng. Speaking to the press at the handing over of the Tenaganita/ PAN AP memorandum, she emphasised that the ban on paraquat should not be reviewed "on the basis of its cost-effectiveness" when human health and welfare are affected. It is difficult to understand why this logic is being consistently ignored in practice.

Fighting the Lobbyists

The activists' response was to make the campaign both national and global. "At the global level, we were trying to get the Pesticides Board to submit paraquat for the PIC list," said Irene. "So once paraquat made the list you would need prior informed consent to import it and so forth. Then you can take steps to strengthen the ban and Malaysia will not backtrack."

In July 2003, padi farmers in Kepala Batas, the constituency of Datuk Seri Abdullah Ahmad Badawi, who was Deputy Prime Minister then, sent a petition urging the government to reconsider its ban on paraquat. A spokesman of the farmers said, incredibly, that there was no scientific data to show that paraquat is dangerous. However, he admitted that poisonings had occurred among farmers. His views therefore need to be more carefully scrutinised for unexplainable bias. [33]

Tenaganita was also on its own signature drive. "Meanwhile we conducted a signature campaign and a postcard campaign to send to the Prime Minister," said Irene.

In Syngenta's Den

At the international level, Berne Declaration was continuing the pressure on Syngenta at its headquarters in Basel, Switzerland. At the company's general assembly on April 29, 2003, Bernhard Herold made a detailed intervention, calling for a worldwide halt to the production of paraquat. Among the points he raised were:

- New developments since its last intervention a year ago included the ban in Malaysia, Chiquita bananas would no longer be grown using paraquat, Swiss wholesaler Migros had stopped the sale of bananas and palm oil products that used paraquat, as had the umbrella organisation of fair trade certification organisations, the Forest Stewardship Council for wood products and Swiss coffee maker Volcafe.

- The Swiss Upper House of Parliament had reiterated its opposition to paraquat and reaffirmed Switzerland's

commitment to campaign for its inclusion in the PIC convention.

- Government surveys in Costa Rica had identified paraquat as the most important cause of poisonings

- Numerous citizens had expressed their concerns via e-mails to the Board president about Syngenta's attitude and called for the production of paraquat to be stopped.

- In western Switzerland, 4,188 signatures had been collected in a petition to stop paraquat.

- The safety concerns about paraquat, and the hazardous conditions of its use worldwide remain unchanged

- The opening of a new paraquat factory in Nantong, China in 2001 and the growing sales in that country due to increased marketing has been accompanied by a dramatic increase in suicides, particularly among women.

Herold had two specific questions:

1. Was Syngenta in principle willing to stop the production of paraquat?

2. Was Syngenta ready to stop lobbying governments in countries like Malaysia which had banned paraquat?

The answer to the first question, as expected, was 'no'. And to the second, the reply was that "what we were calling 'lobbying' were the normal contacts they had with the regulatory authorities." [34]

Berne Declaration was keen to give the shareholders an opportunity to have a close up look at paraquat in the environment in which it is used, so PAN AP sponsored Arjunan on a visit to Basel in time for Syngenta's assembly. Arjunan presented his case as a workers representative to the

assembly through Herold, who circulated his statement to the company's shareholders:

I AM Arjunan Ramasamy, 56 years old and have been a plantation worker for 33 years. Now I have been medically boarded out as I could not continue my work as an oil palm harvester. I suffered severe back pains and my body could no longer take the hard work of cutting down palm oil fruit bunches that weighed sixty kilograms or more. I am married to Patchiammal Muniandy and we have four big boys who are all married. I am now a grandfather as well. In my country, Malaysia, I am identified as a Malaysian Indian.

In the 1920s, my grandfather came from India to Malaysia (then Malaya) on a ship. He was one of those recruited during the British rule in India and Malaya to work in the plantations in Malaya. My grandfather was a migrant worker who was employed as an estate worker in Ulu Bernam, Perak, in an oil palm plantation called United Plantations. This was a Danish company where my father, mother, myself and my son also worked hard. Since the plantation was deep in a jungle area with no road access to the town centre, we in the family had to work in the estate as it was the only way for us to earn a living and have a roof over our heads. In short, four generations of my family gave their lives to the same plantation.

I studied and completed my primary schooling in a Tamil school within the estate. I dropped out of school as there was no secondary school in the plantation. So at the age of 14, I began work in the plantation. My first salary was 50 cents a day. At that time my work was cleaning and removing moss, cutting grass, getting rid of poisoned rats and spraying pesticides. After a few years when I was more adult, I became a harvester of oil palm fruit bunches.

As a pesticide sprayer, I did not know of the dangers of

the pesticides I used. The pesticide was in solid form and blue in colour. The chemical was boiled in water and kept in drums. Each morning, together with others, I scooped it out, mixed the pesticide and filled up the spraying pump, The pumps strapped to our backs, we sprayed for eight hours daily. At times, when there was a leakage in the pump, the pesticide would drip onto our backs. Many workers developed sores and suffered itchiness of their skin due to the poison.

Sometimes the workers were referred to the Estate Group Hospital. There, they were given a "white" cream to rub on their body and some tablets, mainly Panadol by the Hospital Assistant (HA). Some workers stayed in the hospital for two or three days, to recover from the pesticide poisoning.

The plantation workers were not provided with any safety equipment. During lunch break, we were given a kind of oil, which we used on our hands. Then we washed our hands with soap before eating. But some sprayers just ate their food without cleaning themselves well as they did not know of the dangers of the chemical they had used.

Some plantations did provide workers with protective equipment, like masks. Even when it was provided, the workers did not use the protective gear as they felt uncomfortable and it was an obstacle to them spraying the pesticide. The gears and equipment were not at all good for our hot and humid climate.

Today more and more women are working as pesticide sprayers. Majority of the workers in the plantations are Indian women. Women became pesticide sprayers when the plantations moved from rubber to oil palm cultivation. There is very high usage of pesticides, especially herbicides, in oil palm plantations. One of the most commonly used pesticides is paraquat. There are other kinds of pesticides which are also used, but I do not know the names.

Pesticides are very harmful to the women workers. As

a worker and as a union leader for 20 years, I know that women sprayers have suffered very much. Many have complained of stomach pains, of headaches, bad back pains and also prolapsed womb. I know of women who have had miscarriages and lost their babies. Women sprayers have suffered from breast pains and also their breasts swelling or pus developing in their breasts.

The Management would fine the Pesticide Sprayers $1.50 if they found any weeds still alive after the area had been sprayed with pesticides. But when a worker's health is affected due to the pesticides, the management totally ignored it. The same medicines like calamine lotion for itchiness and panadol for pain are prescribed. There was no monitoring of the effects of pesticide poisoning on our health. The workers could not take any action , like requesting for investigations or for referrals to specialists for a medical check up as the workers themselves did not know that they were suffering from poisoning.

Even if the workers had the opportunity to meet the doctor, they were not able to explain their health problem to the doctor due to language problems and no knowledge of the poisons they were using. Hospital Assistants in the plantations are mostly men. The women plantation workers are reluctant to share and explain some of their health problems especially the problems related to their reproductive health. Many suffered in silence and thus have been affected very badly.

When the women sprayers requested for a different kind of job because they could not take the exposure to pesticide chemicals, they were told to resign. The plantations found that they could exploit foreign workers and employ them instead. Today, in most of the plantations almost half of the workers are foreign workers, employed on a short contract basis with lower pay. The foreign workers like the women, do not know about the dangers of pesticide chemicals.

Many of the women continued to work as sprayers because they needed the housing provided by the plantation.

Pesticide sprayers have to work for 8 hours daily. They have to endure terrible heat under the hot sun. Some of the common symptoms are back pain, giddiness, difficulty in breathing, skin problem, nausea, eye irritation, headache, a tight feeling in the chest and fatigue. As the report, "Poisoned and Silenced" states very clearly, paraquat has slowly poisoned our women.

Unfortunately, the National Union of Plantation workers (NUPW) not being gender sensitive and unclear of the effects of the poisons and their impact on human health, was only able to get an extra 12 cents a day for the sprayers. Pesticide spraying was seen as high risk job and thus the 12 cents became an incentive for them to work. Health was sacrificed.

For a long time I have been involved actively with the National Union of Plantation Workers (NUPW). I was involved in the Executive Council of the Union for more than 12 years. Though the Union is aware of the workers' situation, it did not take any serious action to protect the workers' health. The Union as mentioned was only able to treat it as high risk job and thus bargain for an extra amount in the basic salary. This way of solving the problem has been a frustration for me.

While I was struggling to make the NUPW a genuine union for the workers, I came to know a women's organisation, Tenaganita or Women's Force. After various discussions we started to work together closely to develop women's leadership in the Union so that women's concerns and voice will be heard and recognised in the union. Together we raised the issue of pesticide poisoning when Tenaganita came out with their publication in 1992 called "Victims without Voice".

And today, after two years of intensive research,

Tenaganita once again has revealed in their study, "Poisoned and Silenced", how badly women pesticide sprayers are being poisoned with chemicals especially paraquat for a long time.

The women in the plantations do not want their health becoming worse and worse. They have children and many are afraid that their children may already be affected. Both the management of the plantations and the pesticide industry are responsible for the poor and worsening health of the women in the estates. At the moment, Tenaganita is playing an important part in the life of the estate workers' by providing them with information and educating them about the dangers of pesticide chemicals.

But we know that this is not enough. No amount of protective equipment can stop the poisons from going into their bodies. Paraquat is very dangerous and today I know it is a highly toxic pesticide. A poison is a poison. It is made to kill. It is dangerous.

Though a lot of attention has been given to develop Malaysia, very little has been done to protect the health of workers especially of women. Little has also been done to stop the flow of poisons on women, on children and on to our environment. As a representative of my people, I ask you from the bottom of my heart, to understand the call to stop further poisoning our women and children and our environment. We want your company to be responsible, to value life and to respect the health and rights of women and workers in the plantations. So, please stop producing paraquat. Stop selling paraquat. Please put money into finding alternatives. I know if you put your mind, heart and soul, you can make a difference to our lives.

My grandfather, my parents (father and mother), I and my son have given our lives for the plantations that have profited from us. Malaysia has developed from our sweat and blood. We cannot continue in these conditions. It is time

to change. I believe you as shareholders in Syngenta can make a difference to our lives.
STOP PARAQUAT!"

Thank you.
Arjunan Ramasamy
April 2003

At a meeting where Syngenta had asked Tenaganita and PAN AP to meet regarding the findings of *Poisoned and Silenced,* the then incoming Managing Director, John McGillivray countered the recommendations to ban paraquat. He reiterated the safety of paraquat, stating that, "the only problem is that people drink it!" alluding to its use in suicides. He then proposed that Tenaganita and PAN AP undertake a joint research project with Syngenta. Both groups understandably declined the proposal.

In the meantime, the industry lobby had tried to engage Tenaganita by inviting it to undertake a joint research project. "The Malaysian Palm Oil Association has convinced the government that there has to be an independent study, and so the Malaysian Palm Oil Board has taken on the responsibility to do a study on the hazards of the use of pesticides," Irene said. "I believe RM1 million has been set aside for it. There's a total lack of transparency, because we have written to ask what the study is about and where it is being done and I haven't got a reply yet," she said. "They want to push the idea that they have to come up with a study. We are a little bit concerned about the study and nobody knows whether Syngenta is involved, and whether it is given the final say on what goes into it. We don't know."

"In 2003, we heard that the second Roundtable on Sustainable Palm Oil was being held in Kuala Lumpur," said Irene. "So we paid over US$900 per person to participate in this event. We knew that there were buyers, retailers and NGOs among the participants, so we took our report *Poisoned and Silenced*

and distributed it there to put our message across. We also participated in some workshops. I spoke to various people individually, including the key agency Proforest who were organising the roundtable."

Then, in 2004, Irene was elected into the RSPO working group that was developing the criteria for the sustainable palm oil label. "So we saw that this would be a good opportunity to push the paraquat issue and protection of health of women and sprayers in general," she said. "We got involved in the group, and raised the issue of transparency because workers were not being informed what pesticides were being used, including pesticide cocktails."

"Recognising the hazards of agro-chemicals to safety and environment, occupational health and safety, responsibility to the community and respecting their rights – these were the criteria we put together," said Irene.

Initially, paraquat was not on the list of criteria for RSPO certification. "When the criteria in principle were passed in November 2005, there was no clear indication that paraquat had been included among them," Irene said. "But in the development of indicators and guidelines, paraquat was mentioned. This has been a very key battle in the criteria working group because industry representatives said there was no alternative herbicide to paraquat, this is the cheapest and that the smallholders would be badly affected. These were the arguments put forward, but we said we cannot compromise on people's health. I was very firm," Irene said. "The industry has failed to provide effective protective equipment. It has not been able to provide any kind of safety apparel or equipment that is usable in hot, humid climates. Therefore unless and until that protection is there, the hazards will remain. That was the argument that went on. Finally, the RSPO board decided that they would fund an independent study and would consult PAN UK to look for an alternative to paraquat and it will be phased out in the next two years. So palm oil plantations that are part of the RSPO by 2007 cannot use paraquat. So now we've gone through this process to strengthen the campaign, and it is now global in character. So

the pressure to stop paraquat is also coming from retailers and buyers now."

Given the enormous economic value of paraquat and the lobbying that has been a part of the chemical industry's modus operandi, the possibility that the phase out of the herbicide was really a delaying tactic could not be discounted.

Irene was very clear on that: "Oh, yes. That was very glaring. For me that was clear that the government was not very committed. And now again it has been extended for another two years. This is the delaying tactic that is employed. The Malaysian ban has actually proven to be a space for a rethink. Then I think about the whole industry partnership with the government's agricultural drive and it becomes clear that the government had caved in to them."

"For Syngenta, if paraquat is taken out, it will mean a major loss. So they stick to the line that it has been effective in getting rid of weeds. And the tendency has been to make it appear that the only major issue is the suicides, which can be dismissed as the fault of the workers, because there is no antidote. So, they are comfortable with a pesticide they have been using and therefore effective and not necessary to change."

The perfect opportunity came for Syngenta when the European Commission Standing Committee on the Food Chain and Animal Health (SCFA) decided in November 2003 to allow the use of paraquat (with severe restrictions) in Europe. Never mind that the Swedish government had filed a legal challenge against that decision in the European Court of Justice the next month. The general manager of Syngenta Crop Protection in Malaysia John McGillivray held a press conference in November 2003 claiming that the EU's findings showed that paraquat no longer posed a danger to health.

Clearly, all objectivity can be sacrificed at the altar of the mighty market. McGillivray said the study used some of the data collected in a study conducted in Malaysia and concluded that "positive science-based decisions confirm the safety of paraquat to human health and the environment".[35] With that statement, the full weight of the pesticide sprayers' experience

with their daily dose of poison is washed out of sight. In its place, the irrefutable logic of paraquat's commercial value surfaces:

"By denying them," McGillivray said, "Malaysian farmers lose about RM2.73 billion and smallholders tend to be the biggest losers." If that is not compelling enough, the significance of poisoning "incidents" must be downplayed, to be seen in context the total number of occupational hazards, of which they constitute "only 2.5%". So it is all right if some people lose their eyesight, or suffer chronic liver damage since there is so much money to be made by everyone? And so the distortions continue: "Clear scientific research has proven that paraquat is not easily absorbed by the skin and does not produce dangerous fumes."[36]

McGillivray's attempt to leverage on the EU decision was met with a chorus of opposition from the Agriculture Ministry's Pesticide Control Division, National Institute of Occupational Safety and Health, Tenaganita, PAN AP and the Malaysian Trades Union Congress.

"Agriculture Department pesticide control division secretary Samsiah Muhammad said the ban was still in force as paraquat had been found unfit to be used in the country," the *New Straits Times* reported on November 8, 2003, in a follow-up story. "She said paraquat was found to be highly toxic, hence the decision to ban its use." [37]

The European Union's failure to ban paraquat did not pass without a response from civil society groups. A coalition comprising environmental and union groups arose to denounce the action. In October 2003, the groups, namely the Swedish Society for Nature Conservation, European Environmental Bureau, Pesticides Action Network Europe, Friends of the Earth Europe and the International Union of Food, Agricultural, Hotel Restaurant, Catering, Tobacco and Allied Workers Associations issued a statement criticising the EU Commission's Standing Committee on the Food Chain and Animal Health for allowing the continued use of paraquat in member states.

"Adding paraquat to the positive list (of substances allowed to be used in the EU) will now allow greater use of this toxic substance and could force it back onto the market in countries where it is currently banned. It will also encourage its further use in developing countries, despite the known dangers it poses to humans and the environment," says IUF Secretary General, Ron Oswald." [38]

Since the ban on paraquat in 2002, and the subsequent relaxation allowing for its use for oil palm trees that are less than two years old, there has been a lull.

But even certainties like the paraquat ban can be turned on its head when government officials are inclined to take a pro-industry stance. A shocking example was seen in June 2006, when the Director-General of the Agriculture Ministry Datuk Sofian Mohd Salleh called for a so-called consultative meeting on the pesticides issue, which was supposedly a new initiative. Representatives from PAN AP who were present were amazed at the tone of the meeting, which was totally skewed in favour of business interests. The following account is nothing short of an eye-opener.

A PAN AP representative reported: "The Director-General's opening statement itself was that this meeting was a first of its kind to establish a consultative body. It was an effort made by the government to bring the industry into discussions so that it could take the views of the industry into account, and cooperate with them and so on. And we were looking at each other and wondering why they were talking only about the government and industry. What about NGOs and other civil society groups? And the PAN AP representative raised her hand and said that not only these two parties but representatives from the public, like NGOs are interested in giving inputs about pesticide-related issues."

"One of the issues that was being pressed by the chairman was that since the ban, there have been a lot of complaints about illegal distribution and import of paraquat. He was trying to say that this is causing a lot of problems to the government, the industry people are not happy, it's a lot of loss in revenue,

because people are selling it illegally. He was trying to package it to mean that lifting the ban on paraquat was one way to tackle the smuggling and illegal use of the pesticide".

"At this meeting," the PAN AP representative said, "it was clear that they don't care any more about the health of the workers. The bottom line is that a 10 billion dollar industry is at stake. You're asking to take away one of the most cost-effective methods of weed control, is their line. The Health Ministry too is going along, and for the DG of the Agriculture Ministry … that seems to be is his only concern."

PAN AP had a number of reservations concerning the meeting:

- To ensure that the recommendations of the consultative committee were taken seriously, it should be given an advisory status instead of a merely consultative one.

- There should be wider representation from civil society groups to reflect the impacts of pesticides on agricultural workers, consumers and the general public.

- The involvement of business interests would hinder a just and transparent discussion on the hazards of pesticides because of their profit-centred focus and interest in increasing value for shareholders. They will act as a pressure group on the secretariat instead of facilitating consultation.

- The problems of illegal distribution and use of paraquat would not be solved by lifting the ban, contrary to his suggestion at the meeting. That would be akin to legalising illicit drugs as a means of curbing drug trafficking.

- The argument that the RM10 billion pesticide industry's interests should be kept in mind during the forthcoming meeting of the Pesticides Board is objectionable. It should be remembered that agricultural workers also contribute significantly to the economy and their health should be given priority over commercial considerations.

Although these arguments are clear to anyone who subscribes to the basic human values and who is guided by good conscience and the public interest in the discharge of his official duties, the reference point for the director-general appears to be elsewhere.

The veneer of protection that pesticide sprayers had received with the imposition of the ban was to slip further. In June 2006 the secretariat of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade informed the parties to the convention that Malaysia had notified the secretariat that it had allowed the re-registration of five formulations of paraquat.

4.2 Notification of final regulatory action to ban or severely restrict a chemical

(Article 5 of the Convention)

The Secretariat would also like to inform you of the withdrawal of the notification for paraquat made by Malaysia under article 5 to the Rotterdam Convention. The Pesticides Board of Malaysia has, in fact, "reinstated the registration of paraquat" informing the Secretariat that "currently 5 registrants have been granted for registration; however it is only registered for weed control in young oil palm less than 2 years old".]

It was time to take the campaign a notch higher. PAN AP took the appeal to the prime minister. Sarojeni and colleagues in the worldwide network for a poison-free world sent Datuk Seri Abdullah Ahmad Badawi messages that read:

"We recently learnt that the Malaysian government had withdrawn the notification on paraquat with the secretariat of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in

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International Trade. This is truly a lamentable step backwards in terms of the government's action on this very dangerous chemical."

"It has also come to our attention that the industry has been putting pressure on the Malaysian authorities to repeal the ban. PAN AP and our colleagues around the world had previously urged the Malaysian authorities to remain strong against such pressure. We stressed that giving in to such industry pressure would raise serious questions over the government's priorities in terms of good governance in favour of the "rakyat" or putting the people first. The Malaysian government stands to lose face in its standing as a world leader, and a nation fast approaching developed status."

"Reconsideration of the ban of one of the most hazardous poisons in the world has serious implications in terms of protecting workers and farmers' health, and their right to a safe working environment in Malaysia. Clearly, going back on the decision to ban would compromise Malaysia's global reputation, and would also imply that in Malaysia the industries' profits override the health considerations of the people."

The strength of this appeal rests in the value that the Malaysian government places on its reputation as a nation that subscribes to the right of workers to be free from harm at their workplace, upholds the public interest over commercialism in the conduct of governance and respects the universal values of human rights that the commonwealth of nations holds as the standard of a developed and progressive nation.

The letters end with a powerful appeal:

"We also cannot stress enough how harmful paraquat is to human and environmental health. We therefore urge Malaysian government, especially the Pesticides Board, to not reconsider the ban. Instead we urge you and other members of the Board to stand firm and issue an immediate, outright ban on this hazardous pesticide for the sake of all Malaysians."

Is this enough to move the people who are sitting on top of the colossal interests that govern the agri-business sector?

That at least is the hope of people who can hear the voice of their conscience.

That voice was added strength when François Meienberg of the Swiss NGO Berne Declaration wrote a vigorous letter to the members of the Pesticides Board detailing the voluminous evidence against the harm caused by paraquat and stressing the impossibility of ensuring its safe use under the hot, humid conditions in the tropics:

"The Food and Agriculture Organization of the United Nations (FAO) has recommended that 'pesticide formulations in WHO Class 2 should only be provided if it can be demonstrated that users adhere to the necessary precautionary measures (9)' (FAO 1994, Art 3.2; and reference 9 therein: FAO 1992).

"However, it has been pointed out repeatedly that the equipment for personal protection, farmers' facilities and safety training are very often insufficient in many countries and that this leads to unacceptably high levels of pesticide exposure during application. Therefore the Food and Agriculture Organization makes the following recommendations:

'Preference should be given to pesticides that require inexpensive personal protective and application equipment and to procedures appropriate to the conditions under which the pesticides are to be handled and used' (FAO 2002, Art 3.5)."

There is more damning evidence that the chemical industry's claims that paraquat can be used safely in tropical environments and that it has trained countless workers and farmers to use the pesticide safely are utter rubbish.

"The US Environmental Protection Agency has evaluated the occupational risks of paraquat," the letter continues. "A study on the exposure of workers mixing, loading and applying paraquat concluded that the dermal margins of exposure (a measure for the risk) were unacceptable for workers with backpack and low pressure sprayers even when the workers wore long pants, a long-sleeved shirt, chemical-resistant gloves and shoes with socks as personal protective equipment (PPE). The Agency was 'concerned about the practicality of adding

another layer of PPE (woven material), due primarily to heat stress considerations' (US EPA 1997a, p.56)."

Additionally, Meienberg notes the legal challenge mounted by the Swedish government against the European Commission's decision of December 2003 allowing the use of paraquat, when over 20 countries had by then banned, withdrawn or restricted the deadly herbicide.

"The field studies included in the Commission's assessment material show, however, that users risk exposure to unacceptably high doses even if they use the prescribed equipment' (Kingdom of Sweden, Letter to the Registrar at the Court of Justice of the European Communities (quoting pp. 3, 4 and 7), 26 February 2004)."

Furthermore, countries ranging from Switzerland (1989), to Cambodia (2003), Syria and the United Arab Emirates (both 2005) have banned paraquat. Now, responsible companies are responding to the growing consumer demand for socially just production processes.

"The network of Fairtrade Labelling Organisations, producing for a fast growing market in Europe and the US, has banned the use of paraquat for certified producers for all crops three years ago. Paraquat has also been banned by other labelling organisations like the Forest Stewardship Council, the Rainforest Alliance or the Common Code for the Coffee Community. All these companies and label organisations are reacting to the growing consumer demand for agricultural products produced under socially and environmentally sound conditions."

The references alone for that letter, citing all the relevant studies, directives and cautions fill a full four pages, making up more than half the total length of the document. So compelling is the case against paraquat is that any responsible authority would not lose further time before throwing this pernicious poison into the dustbin of history.

With the odds stacked against the powerless pesticide sprayer, what is needed is for public opinion to be ignited to reject the unconscionable pursuit of profits at the expense

of human lives and the environment. This can take the form of expressions of support for the ban such as the signature campaign launched in October 2006 by the Malaysia-based grassroots group Sustainable Development Network (Susden), in support of Tenaganita's drive to retain the ban on paraquat.

Jennifer articulates some of the deeper issues involved: "The biggest challenge is dealing with the structural issues. It's not just a question of producing the evidence against paraquat. I've proved my case. I have the merit of my position. There's a wealth of information outside of Malaysia to really back my arguments. It's not science, it's not truth, that they (the powers that be) are interested in any more. For us, it's really battling against these structural dimensions, one by one. And frankly, the lobbying. That's the biggest challenge for us. Because how do you fight how somebody influences decision-makers, and you don't want to play that game, and you don't want to be involved in that kind of activity."

But a fundamental optimism drives the campaign. "Our hope is that there will be a global response to the issue," said Irene. "This whole phenomenon of a foreign company so blatantly harming our population and getting away with it is so unacceptable that it must be made to live by the standards of corporate social responsibility that are expected of any ethical business organisation."

"I think what makes us continue is also that when we see the women getting empowered, they stop working as sprayers, and demand for alternative jobs. Although it impacts on our work of building community leaders who can mobilise the people affected by pesticides, it is a positive outcome of their empowerment. Now the challenge for us is to also work with migrant workers because they are the new victims as they begin taking up the spraying jobs."

one more extra picture

CHAPTER FIVE

CORPORATE SOCIAL RESPONSIBILITY: A RECKONING

The idea of corporate social responsibility emerged in the early 20th century as a response to growing corporate power and domination. Corporations then came under attack for being too powerful, too big and carrying out anti-social and anti-competitive practices. In order to curb corporate power, antitrust laws, banking regulations and consumer protection laws began to appear on the radar screen of corporate critics.

In the face of increasing social protests some clever business executives advised corporations to use their power and lobby voluntarily for broader social objectives rather than profits alone. Henry Ford, the automaker for example developed paternalistic programmes to support the recreational and health needs of his employees. Andrew Carnegie, the wealthy steelmaker gave much of his wealth to education. These

business leaders believed that business had a responsibility to society beyond their effort to make profits.[1]

The founder of the Tata Group of Companies Jamsetji Tata said in "The Creation of Wealth", 1895: "We do not claim to be more unselfish, more generous or more philanthropic than other people. But we think we started on sound and straightforward business principles, considering the interests of the shareholders our own, and the health and welfare of the employees the sure foundation of our prosperity." Tata was one of the earliest corporations that introduced 8-hour working day, free medical aid, committee for complaints service, provident fund, leave with pay and maternity benefits even before the law was enforced.[2]

> The UNDP in urging for better governance and greater accountability of multinational corporations concluded in its Human Development Report 1999:
>
> "multinational corporations are too important and too dominant a part of the global economy for voluntary codes to be enough. Globally agreed principles and policies are needed for human concerns – to ensure compliance with labour standards and human rights; economic efficiency – to ensure fair trade and competitive markets; environmental sustainability – to avoid degradation and pollution." The report also stated: "Multinational corporations are already a dominant part of the global economy – yet many of their actions go unrecorded and unaccounted. They must, however, go far beyond reporting just to their shareholders. They need to be brought within the frame of global governance, not just the patchwork of national laws, rules and regulations."

David Korten, founder of People Centered Development and a former World Bank official is frequently quoted in training programmes on corporate social responsibility. He says

"Business has become, in the last century, the most powerful institution on the planet. The dominant institution in any society

needs to take responsibility for the whole …Every decision that is made, every action that is taken, must be viewed in light of that kind of responsibility." [3]

The domination and power of corporations have been further enhanced by rapid globalisation in the last two decades.

The meaning of Corporate Social Responsibility:

Corporate social responsibility means that a corporation should be held accountable for any of its actions that affect people, their communities, and their environment. It implies that negative business impacts on people and society should be acknowledged and corrected if at all possible. It may require a company to forgo some profits if its social impacts are seriously harmful to some of its stakeholders or if its funds can be used to promote a positive social good.[4]

Corporations that claim to practise CSR must therefore discontinue products or business practices that have negative impact on people and the environment. Paraquat is one of the most hazardous poisons in the world with serious implications on the health of workers and farmers. Clearly, a company that continues to produce and market paraquat cannot claim to be socially responsible.

Public Relations or Genuine Concern?

Worldwide there is deepening concern about the increasing power of TNCs and the social, environmental and economic consequences of their business activities. Rachel Carson's Silent Spring tainted the image of chemical corporations. The work of civil society organizations like the Pesticide Action Network and Tenaganita continuously and relentlessly expose the unconscionable damage done by pesticide companies. Interestingly, however, the chemical companies are addressing the concerns of communities and civil society by re-branding their public face instead of removing their dangerous chemical products.

The chemical corporations and their siblings the

biotechnology industry market themselves as "LIFE SCIENCES" aimed to create a positive image. The term "LIFE SCIENCES" and Crop Sciences promote an image of superior scientific credibility. They aggressively seek the moral high ground by branding their products as feeding the hungry, practising sustainable agriculture, for protecting the environment, safe for use in developing countries, IPM friendly, socially viable, and as supporting human rights. In support of these claims, the chemical corporations produce impressive annual CSR reports claiming to practise sustainable agriculture. However, the corporate practice of sustainable agriculture is chemical dependent, destroys the environment, does not respect farmers right to land and places priority on profit maximisation of labour and land. The principles of sustainable agriculture as practised by farmers draws on the best practices of organic, biodynamic, regenerative, low external input, traditional and permaculture system, and protects the rights and livelihoods of small farmers and rural communities.[5]

The annual CSR reports of corporations should provide health, safety and environmental disclosure of their products and activities. Instead the CSR reports contain mere public relations messages.

These snippets from Syngenta's CSR Report 2005 are intended to convince the world that it is a company that is ethical and responsible.

- *In particular this year, the report focuses on the areas in which we have the greatest expertise and the greatest impact: sustainable agriculture and product stewardship. Syngenta's activities are critical to sustainable agriculture. We help farmers worldwide to feed growing populations and to be responsible stewards of the land. Agriculture land cannot expand significantly without negative effects on biodiversity. Our technologies and products help growers meet this challenge and raise yields on existing farmland under cultivation." Martin Taylor, Chairman of the Board of Directors*

- *Soil conservation and biodiversity*
  Syngenta products increase the output from existing farmland. This contributes to sustainable agriculture by reducing the need to convert further natural habitats for agricultural purposes. New products are developed for use within sustainable agriculture and integrated pest management (IPM) programs.

- *Syngenta also works in partnership with a wide variety of environmental organizations to develop application programs that are effective, protect biodiversity and conserve soil and water. The use of GRAMOXONE in conservation tillage is of particular significance."(GRAMOXONE is the brand name for paraquat)*

- *Soil and Water Protection (SOWAP) is essential to agriculture's sustainability. Syngenta runs the SOWAP project, a partnership of 15 private and public organizations investigating the benefits of 'conservation-tillage' farming in Belgium, the Czech Republic, Hungary and the UK.*

- *Syngenta Foundation for Sustainable Agriculture*
  The mission of Syngenta Foundation is to increase opportunities and choice for people in poor rural communities in semiarid areas and to improve livelihoods through innovations in sustainable agriculture.

- *In late 2004, Syngenta commissioned independent researchers to investigate the safe use of crop protection products (CPPs) among 2,400 spray workers in eight countries. The research examined knowledge, attitudes and practices in Brazil, China, France, Ireland, Malaysia, Mexico, the Philippines and Thailand. The survey focused on users considered to be at the greatest risk of exposure – smallholders using knapsack sprayers and those less likely to receive safe use education…The research found that farmers pay special attention to application, where*

they perceive the risk as greatest. Brazilian and Malaysia smallholders lead the way in the use of personal protection equipment.

In Chapter 24 (Promotion of Sustainable Agriculture and Rural Development) the United Nations Agenda 21 states the following about the future of herbicides: *"Integrated pest management, which combines biological control, host plant resistance and appropriate farming practices and minimizes the use of pesticides, is environmentally friendly and contributes to the sustainability of agriculture."* The concept of sustainable agriculture is not compatible with the use of paraquat. Therefore, the snippets above from Syngenta's website are just a market pitch. From January 1st 2014, pesticide use in the European Union will be subjected to the principles of integrated plant protection.

The international organisation of Integrated and Biological Control of Noxious Animals and Plants (IOBC) is the global leader in the development and implementation of principles and guidelines of integrated production. In 2004, the IOBC technical guidelines II stated that weed management whenever possible should employ non-chemical methods. The IOBC in 1999 stated that: …*unselective pesticides with long persistence, high volatility, leachable or with other major detrimental characteristics (e.g. stimulation of non-target pest organisms) are prohibited.*[6]

The non-selective herbicide paraquat with a soil half-life of seven to twenty years falls under this general prohibition. The westpalearctic section of the IOBC (WPRS) has drawn up a green list (admissible pesticides) which fulfils the following criteria:

- Human toxicity.
- Toxicity for beneficial organisms.
- Toxicity for other natural organisms.
- Potential for environmental contamination (soil, water and air).
- Potential for promoting pests and diseases.

- Selectivity.
- Persistence.
- Incompleteness of information.
- Necessity of application.

Under these criteria, paraquat does not qualify for integrated production. It has high acute toxicity for mammals, is extremely persistent, non-selective, contaminates the soil and above all is not needed given the existence of non-chemical alternatives and less problematic herbicides.

In the 2005 social and environment report, Syngenta claims that paraquat has benefits for the environment. These claims do not hold up under scrutiny.

Key Performance Indicators (KPIs)

Among the KPIs for social responsibility are a number of programmes developed and shared, number of programs in place, business plans developed, number of projects, number of programs, percentage of incidents due to misuse and accidents, numbers trained, number of programs implemented, completed, compliance with FAO Code of Conduct, number of countries and farmers included in survey, breaches of national or international regulations resulting in a fine from a regulatory agency, feedback from employee survey, measure progress in attitude to diversity through employee survey.[7]

But do these KPIs measure up to the social responsibility expectations of all stakeholders? Take the issue of ecological agriculture and agroecology. Agroecology is a "truly pro-poor farmers science", which encompasses land distribution, indigenous people's and farmers' rights, the impact of globalisation on food security, and of biotechnology on traditional agriculture, as well as measures to enhance functional biodiversity within the agroecosystem.[8]

However, the KPI's of CSR as reported in the 2005 CSR Report of Syngenta do not meet the benchmarks of agroecology. Its promotion of its agrochemical products to create chemically dependent agriculture particularly in developing countries

fails the test of sustainable agricultural practices.

Chemical corporations use benign sounding names such as conservation tillage to mask broadscale herbicide application. But for hundreds of years farmers have used soil conservation strategies without recourse to herbicides. Some chemical corporations claim their products are IPM friendly when in effect they destablize the agroecological system for example Rhone-Poulenc's fipronil and Zeneca's lamba-cyhalothrin are reported to have negative impacts on natural pest controls and to have the potential to promote severe outbreaks of disease in Vietnam.[9]

These companies have hijacked the concept of ecological agriculture rebranding it as ecoagriculture. Their practices are in direct contravention of the principles of sustainable agriculture. The marketing campaigns of pesticide companies tell a story of business as usual behind a veneer of social responsibility.

Syngenta is silent about the millions of people who are exposed to the chemicals produced by the company. Occupational pesticide poisoning is a serious problem in plantations, rice fields and vegetable farms in developing countries. As has been stated earlier, workers in plantations spray minimum of seven hours a day for 262 days, often without protective clothing, with severe health consequences. The CSR report of Syngenta does not disclose the information on the health and safety impacts of paraquat on sprayers. The reports therefore raise more questions than answers on the CSR practices of Syngenta.

The CSR report fails to provide information and details on the number of cases of poisonings caused by paraquat worldwide. The Health and Safety performance report states: "In 2005 there were 126 reported injuries, resulting in 1,001 lost days. The most common were bruises, strains and sprains, followed by cuts and abrasions. There were 24 reported cases of occupational illness, down from 26 in 2004." This information is not good enough for a corporation that claims to be a leader in corporate governance. Without the cessation of the use of

paraquat, the social programmes of Syngenta are nullified.

Social Responsibility and Euphemisms

The right to information is a fundamental right of users of products and services. The user of a product must be given the full information on what it is (toothpaste, coffee, wheat, rice, plastic, poison, medicine etc.) the ingredients in it, how to use it, how to store it. Chemical corporations are not calling a spade a spade. Pesticides, herbicides, fungicides are now crop protection products (CPPs). The term CPP does not reflect the true nature of what these products are. CPPs do not communicate the message that the user is handling poisons. The words pesticides, herbicides, poison sound warning bells as they indicate precaution, negative, dangerous and risks.

In contrast the term CPPs evoke positive perceptions about hazardous products. The use of euphermisms to mislead perceptions are unethical particularly when a corporation markets itself as being socially responsible.

After the Malaysian Ban, corporate social responsibility fails.

Unethical Advertisements

Let us take the case of Syngenta's Paraquat advertisement in Thailand in 2004.

PAN AP sent a strongly worded letter to the Director General of the UN Food and Agriculture Organisation, on Syngenta's advertisement drive for its new formulation of paraquat, which contravenes the FAO International Code of Conduct on the Distribution and Use of Pesticides (FAO Code). Ironically, the company supports the Code.[10]

Groups in Europe, including PAN UK, PAN Germany, and the Swiss NGO Berne Declaration, supported the letter from PAN AP. "The revised Code of Conduct was a recognition by governments, industry and public interest groups of the need for greater efforts to combat pesticide hazards in developing

countries, and it is disappointing that the important commitment on advertising is being disregarded,' said Barbara Dinham, Director of PAN UK.[11]

For François Meienberg of the Berne Declaration, the Syngenta Campaign to boost paraquat sales in Thailand shows three different aspects: "First, It does not seem possible to sell paraquat without inappropriate incentives, therefore the product is perhaps not as good as Syngenta always claim. Second, Syngenta has not taken its responsibilities seriously. It is not enough to adopt a code. It has to be implemented. Third, Corporate Social Responsibility is not something to be put in a booklet for the Annual General Meeting, but to do business accordingly – for the whole year, and worldwide!"[12]

Concerns over pesticide use in Thailand have been noted in recent times. According to the IPM DANIDA project report of December 2003, the use of pesticides in Thailand has increased enormously in the past twenty years. According to the Thai Ministry of Agriculture and Cooperatives, pesticides are "a highly lucrative business" worth 9,116 million Bhat (US $225 million) per year. Foreign companies such as Bayer, Monsanto, Syngenta and Dow hold the largest share of the market. According to the report, some of the pesticides that these companies are selling in Thailand are banned in other countries because of the dangers to human health. The report includes case studies of the negative health impacts of pesticides, including the death of a farmer who had extensively sprayed a mixture of paraquat and glyphosate while hired to spray herbicides in rubber plantations.[13]

Syngenta advertisement in Thailand.

(INSERT PICTURE - Syngenta ad Thailand May 2004_Page_2a.jpg)

ESCAP (2002) reports that pesticide poisoning has become "a serious health problem for millions of Thai farmers". The average rate of increase of pesticide poisoning during the years 1971-1988 was 251 per cent per year, compared with the annual increase in pesticide use during the period of 18.5 per cent – from 74 reported cases in 1971 to 2,170 reported cases in 1981. ESCAP acknowledges that many pesticide poisoning cases may never be reported, as many victims do not go to a doctor or are not diagnosed correctly.[14]

The letter from PANAP to FAO highlights these concerns, draws attention to the violations of the FAO code and urges the organisation to act.

PANAP letter to FAO:
Mr. Jacques Diouf
Director-General,
Food and Agriculture Organization of the United Nations
Via della Terme di Caracalla
00100 Rome
Italy
28th July 2004

RE: CONCERN OVER PESTICIDES ADVERTISEMENT IN THAILAND BY SYNGENTA

Dear Mr. Diouf,
We would like to bring to your kind attention a recent advertisement campaign by Syngenta Crop Protection Limited in Thailand. The advertisement in question is part of the Syngenta 2004 marketing activity in the country to promote the new formulation of the herbicide paraquat, where it is sold under the trade name Gramoxone Gold Cap. (See: http://www.syngenta.co.th/pop_mar.asp)[a].

The promotion of Gramoxone Gold Cap takes the form of a

lucky drive competition, where entry affords people a chance to win different prizes in the months of June, July and October 2004. These prizes range as follows: winning 1 liter of the new formulated Gramoxone Gold Cap or a Safety Kit; winning a 'Yamaha Fresh' motorcycle, and winning a Nissan 'King Cab' Truck. Additionally, the advert states that every purchase of Gramoxone will contribute to 'Syngenta's Fund for New Generation Farmers' to support safe food—this incidentally constitutes the fourth prize in the competition. Other prizes include Gramoxone jackets and t-shirts.

We are appalled at this advertisement drive for Gramoxone by Syngenta in Thailand, and are concerned that it violates the UN FAO International Code of Conduct on the Distribution and Use of Pesticides, in particular Article 11.2.18.

Article 11.2.18 states, "advertisements and promotional activities should not include inappropriate incentives or gifts to encourage the purchase of pesticides." A competition of this nature, which offers prizes like motorcycles and a truck as incentives or gifts to encourage the purchase of pesticides, is inappropriate, particularly in a country like Thailand where poor farmers earn an average of 2,500 Baht (US $60) a month, according to this year's mid-year economic review in the Bangkok post. A motorcycle and truck would be considered expensive luxury items that poorer farmers could not afford or readily purchase on this average income, therefore making them very attractive prizes to try to win.

We are concerned that the competition encourages farmers to buy regardless of whether they have assessed the need for the product, and the quantity that they need to use.

We are also concerned that the advertisement also contravenes the following Articles of the Code.

Article 11.2.8 states that "claims as to safety, including statements such as "safe", "non-poisonous", "harmless", "non-toxic" or "compatible with IPM", are not made without a qualifying phrase such as "when used as directed". Although the advertisement does not overtly state or claim that Gramoxone is safe, it does imply that it is trusted by farmers, and contributes

to safe food. Specifically, the company has stated that for the 4th prize, "Every bottle of Gramoxone contributes to the Syngenta Fund for New Generation Farmers to support safe food."

Article 11.2.13 states that the Pesticides industry should ensure that "advertising or promotional material draws attention to the appropriate warning phrases and symbols as laid down in FAO labelling guidelines (3)". Although part of the label indicates the Thai registration status "registered as dangerous material No 2045/2544", we are concerned that the whole tone of the advertisement implies there is no need for concern with warning phrases or symbols.

Article 11.2.17 states that the pesticides industry should ensure that "advertisements encourage purchasers and users to read the label carefully, or have the label read to them if they cannot read." The advertisement does not encourage users to read the label.

We strongly believe that the advertisement and promotion drive by Syngenta goes against the letter and spirit of the Code, and misrepresents the toxic herbicide paraquat, a product that could endanger both farmers and consumers in Thailand. The government of Malaysia has recently imposed a ban and phase out of paraquat to protect its farmers and farm workers. We are very concerned that this advertisement is part of a 'hard-sell' by the company, and could be a form of dumping of the product into Thailand in reaction to the government's decision in neighbouring Malaysia.

Irrespective of the Thai governments' policy and regulations on the production, marketing and sales of paraquat, this advertisement contradicts the industry's own commitment to the revised FAO Code of Conduct. In a Press Release of 3 March 2004, Michael Pragnell, President of CropLife International and CEO of Syngenta, said: "The adoption of this new Code by the member companies of CropLife International demonstrates the industry's commitment to take its responsibilities seriously, reflecting its crucial role in the sustainable development of agriculture." At the recent CropLife International Annual Conference in Brussels on 3 June 2004, Mr. Pragnell's welcome

speech stated that, "CropLife requires its members to commit to the FAO Code of Conduct and we support our members with Guidelines to help industry implement its obligations—including our long-standing investment in product stewardship".

Paraquat is one of the most dangerous and controversial herbicides in the world. Internationally, and especially in the South, workers and farmers who are regularly exposed to paraquat experience serious problems with their health. Paraquat is highly acutely toxic. It is a known poison without an antidote.

Acute poisoning and chemical burns to agricultural workers and small-scale farmers are a frequent occurrence. The greatest risk to workers of fatal and serious accidents is during mixing and loading of paraquat. A number of deaths have been recorded from contact with the spray solution. Conditions of use in many developing countries mean it is difficult to follow label instructions and recommendations for use. These conditions include high temperature and humidity, lack of protective clothing, leaking knapsack sprayers, illiteracy, lack of facilities for washing, or medical treatment, and repeated exposure. Recent evidence is indicating new concerns with chronic effects, such as a possible link to Parkinson's Disease.

Due to these concerns regarding exposure to paraquat and its adverse health impacts on humans, we wish to register our protest against the advertisement by Syngenta promoting its product paraquat, Gramoxone, in a manner that may widely mislead the citizens of Thailand.

We in the pesticide reform movement have continually stated that if environmental degradation and adverse human health impacts are to be minimised, then precaution must be the overriding principle. Where there are serious implications to human health, the precautionary principle must apply.

PAN Asia and the Pacific is committed to the promotion of safe and ethical agricultural practices whilst opposing the use of pesticides that endanger and poison both farmers and consumers alike. Corporate responsibility and accountability is integral in safeguarding ecologically sustainable agriculture.

The onus remains on the manufacturer of these chemicals to prove that their products do not cause adverse impacts on human health and the natural environment, not the responsibility of the consumer to prove its associated hazards.

We urge you to look into this matter and take the necessary action.

Sincerely,
Sarojeni V. Rengam
Executive Director

The FAO commends PANAP

FAO's response on PANAP's complaint on the above advertisement in Thailand:

"On behalf of FAO, I acknowledge receipt of your letter dated 28 July 2004 addressed to the Directoe-General, Mr. Jacques Diouf, stating your concern regarding a recent advertisement for the pesticide paraquat appearing in the Thai press. FAO also received a supportive statement for your letter from another NGO called 'Berne Declaration'.

I wish to commend Pesticide Action Network for this initiative, which is in line with the provisions of the revised version of the International Code of Conduct on the Distribution and Use of Pesticides, in particular with Article 12, paragraph 12.9 on 'Monitoring and Observance of the Code', which states:

'NGOs and other interested parties are invited to monitor activities related to the implementation of the Code and report these to the Director-General of FAO.'

You may note, in this regard, that FAO has written to the Ministry of Agriculture in Thailand with a view to bringing the concerns you have expressed to the attention of the responsible government entity.

I wish to thank you, once again, for informing the Organization of this issue."

Signed by Mahmoud Solh, Director, Plant Production and Protection Division, FAO

Syngenta Reacts to the Complaint to FAO:

Pesticide Action Network (PAN)
Asia and the Pacific
Ms. Sarojeni V. Rengam
Executive Director
P.O. Box 1170
10850 Penang
Malaysia

August 10. 2004

Accusations made by the Pesticide Action Network against Syngenta in Thailand

Dear Ms. Rengam:

We are concerned by the accusations in your press release from 28th July. You accuse Syngenta of breaking the FAO Code of Conduct on the Distribution and Use of Pesticides, specifically Article 11.2.18, concerning the appropriateness of incentives in advertising. We have not seen the accompanying letter to FAO Director-General Jacques Diouf, but the press release is based upon an incomplete and misleading representation of the facts.

First, let me assure you that that Syngenta is seriously committed to the implementation of the Code of Conduct. Thousands of internal brochures have been distributed to employees and there is an internal campaign to increase awareness and to ensure compliance with these guidelines.

With regard to the advertising campaign in question, the focus was safe use of pesticides alongside the legitimate promotion of one of our major products. Gramoxone Gold Cap (paraquat). The campaign included 400, 000 pesticide safety kits (56% of the total cost), 30 motorcycles (17% of the cost) and one pick-up truck (9%) of the cost and a 1 Million Baht (18% of the cost) donation to a Ministry of Education rural school programme was approved by the Ministry of Communication and Interior and by the Thai Crop Protection Association, the local industry custodian of "The FAO Code of Conduct" and is in line with

other legal and approved promotions run in rural Thailand, where motorcycles and pick-up trucks are essential tools for rural Thais, who own 15.8 million motorcycles (1.32 per family) and 2.8 million pick-up trucks (0.23 per family).

Unfortunately, you chose not to mention the main focus of the campaign – product safety. I assume that you nevertheless share with us a commitment to the promotion of safe use of crop protection tools. Your press release also characterizes the programme as inappropriate by misrepresenting statistics on the wealth of the target group of customers and makes a number of other complaints, which are not supported by the evidence you present.

At Syngenta we are strongly committed to improving the well-being and prosperity of our customers and to the observance of FAO Code of Conduct. Our openness and accuracy in the reporting of facts is audited on many levels by independent commercial and governmental regulatory agencies, and our shareholders closely scrutinize the results.

We trust that this information clarifies the issue.

Signed by Michael Stopford, Head of Global Public Affairs & Government Relations, Syngenta

Violations in Malaysia, After the Ban

"Unscrupulous dealers offering gifts for bulk purchase of paraquat," reads a newspaper headline.

To reap as much profits as possible from the deadly killer, paraquat, Syngenta dealers and distributors succumbed to unethical marketing strategies before the Malaysian ban on paraquat was to take effect in 2005. Pesticide dealers and distributors offered gifts, including digital cameras, for bulk purchases of paraquat in 2003.

> Pesticide dealers and distributors are offering gifts, including digital cameras, for bulk purchase of paraquat as the day for the weedkiller to be classified as 'most fatal'

> draws closer. Brochures offering digital cameras for 1,000 litres of the weedkiller, a watch for 600 litres, a cooler box for 100 litres and T-shirt for 12 litres have been received by regular customers, including retail outlets, plantations and farmers. Brochures were also faxed to potential customers. A group of concerned environmentalists have described the offers as 'disguised scams'. The offer of such gifts with the sale of paraquat was illegal under the Pesticides Board regulations. "This shows that these dealers were trying to dispose of their stocks and unsuspecting buyers end up with huge stocks of the weedkiller." It has been estimated that there are 1.2 million farmers, 700,000 smallholders and 3,500 estates in the country and the unscrupulous distributors hope to sell them the pesticide. The customers are made to believe that they could still use the product after Oct 1 without taking extra precautions as prescribed under the Guidelines on Pesticides (Highly Toxic pesticides) Regulations 1996. Many agriculturists lured into buying the paraquat have been misled into believing that the promotion would also mean that they could still use the pesticide after the ban takes effect. (*New Straits Times*, 24 August 2003)

As the environmentalists have highlighted, the offer of gifts for bulk purchases violates the Pesticides Act 1974 and the FAO Code. Syngenta is responsible for the conduct of its distributors and retailers.

In a misleading, blatant and pernicious marketing campaign in Malaysia, ICI Agrochemicals (now Syngenta) took out one page advertisements in 1992, declaring "Paraquat and Nature Working in perfect harmony". The message was incorrect as paraquat accumulates in soil and poses a risk to non-target terrestrial and aquatic vegetation, is highly embryotoxic for amphibian, acutely toxic to birds, and poses a risk of sublethal poisoning for wildlife.[15]

The then National Consumer Protection Advisory Council located in the Ministry of Domestic Trade and Consumer Affairs challenged ICI to provide evidence to support the

claims in the advertisement. ICI removed its totally misleading advertisement on paraquat in Malaysia after the Ministry of Domestic Trade and Consumer Affairs requested the company to prove the claims in the advertisement under the Trade Descriptions Act, 1946.

In Guatemala images of scantily clad blonde women were used, again by ICI, to promote the herbicide Fusilade (fluazifop-p-butyl).[16]

Such seductive marketing campaigns create wrong perceptions about pesticides. It has been reported that pesticides have become a status symbol in some countries such as Cambodia. In some languages e.g. Khmer and Tamil pesticides are referred to as medicine. Unethical marketing masks the hazards of chemicals.

These glib marketing practices are contradictions in corporate social responsibility. A corporation that practices social responsibility will observe high ethical standards in its marketing strategies.

The plantation industry and CSR

The Malaysian Palm Oil Association (MPOA) took the lead to work towards the production of sustainable palm oil through its Roundtable on Sustainable Palm Oil (RSPO) programme. A set of principles and criteria has been developed to define RSPO. One key criterion is a commitment to pesticide free palm oil and a second crucial one is on workers and women's rights. The MPOA by pushing the government to review the ban with the objective to re register paraquat makes a mockery of its leadership in the Roundtable on Sustainable Palm Oil. The role of the MPOA in this whole process only reflects the chameleon character of the plantation industry and its insincerity to sustainability.

The Principles and Criteria for Sustainable Palm Oil Production developed by the Roundtable on Sustainable Palm (2005) oil reflect ethical standards to be adopted by socially responsible corporations. These principles are:

Principle 1: Commitment to transparency
Principle 2: Compliance with applicable laws and regulations
Principle 3: Commitment to long-term economic and financial viability
Principle 4: Use of appropriate best practices by growers and millers
Principle 5: Environmental responsibility and conservation of natural resources and biodiversity
Principle 6: Responsible consideration of employees and of individuals and communities affected by growers and mills
Principle 7: Responsible development of new plantings
Principle 8: Commitment to continuous improvement in key areas of activity[17]

Principle 4: Use of appropriate best practices by growers and millers
Criterion 4.6: Agrochemicals are used in a way that does not endanger health or the environment. There is no prophylactic use, and where agrochemicals are used that are categorised as World Health Organisation Type 1A or 1B, or are listed by the Stockholm or Rotterdam Conventions, growers are actively seeking to identify alternatives, and this is documented.

The MPOA's response to the Malaysian ban on paraquat does not reflect the plantation industry's commitment to the above criterion of RSOP:

"MPOA is questioning the basis for the Pesticide Board's decision to ban paraquat. Was there a recent study? Is there new evidence against paraquat? 'We oppose the decision,' says M.R. Chandran, MPOA's chief executive. 'Cost of production will

increase if paraquat is banned and Malaysia's competitiveness in the global edible oil markets will be significantly reduced'.

The proposed ban, he says, will increase the Malaysian palm oil sector's cost disadvantage against international competitors by US$8.20 per ton in the medium term." (New Straits Times, 26 January, 2003)

The chemical and the plantation industries fail in their social responsibilities by continuing to oppose the Malaysian ban on paraquat, the herbicide without an antidote. After the Malaysian government announced on August 27, 2002 that paraquat would be phased out by 2005, the plantation industry launched campaigns to get the ban reversed.

Syngenta resorted to campaign strategies that raise ethical concerns about the conduct of the corporation. It does not respect a sovereign government's decision to remove a highly hazardous product to protect its people and environment. 70 per cent of all cases of poisoning occurred in the agriculture sector, according to the National Institute for Occupational Safety.

A report in the Interpress Service (IPS) of July 23rd 2003 by Baradan Kuppusamy states:

> Since the government (Malaysia) decision was made to ban paraquat, plantation companies and agrochemical giants like Syngenta have launched a campaign to get the ban reversed. They have roped in the media, plantation workers, their trade union, fruit growers and rice farmers to join forces with big business to revoke the ban. Earlier this month, about 30 rice farmers in Kepala Batas (Prime Minister's constituency) in the state of Penang staged a demonstration against the paraquat ban. They claimed, in a memorandum to the government, to represent 17,000 rice farmers and argued that paraquat is cheap, effective and proven. They quoted a now-famous Syngenta phrase; Paraquat is a dream product. The campaigners who want the paraquat ban revoked are mobilizing Malaysia's 500,000 oil palm small holders and 300,000 rice farmers, who together form an extremely important rural vote bank for the ruling

National Front government. An association representing rice farmers, rubber and oil palm small holders were mobilized the protest and send memoranda against the ban on paraquat.

The small holders and rice farmers are a powerful political force critical to the politics of paraquat. It is ethically questionable to mobilize these very people who face the risks and health effects of paraquat. Did the chemical corporation disclose to the farmers the risks they faced as paraquat users? The farmers were misinformed through messages from Syngenta such as "paraquat is a dream product", "cheap, safe and effective".

The media were feted to luncheons during the campaigns to influence the government to revoke the ban. A Syngenta team hosted a lunch during a paraquat briefing sessions for the Tamil daily *Malaysian Nanban*. A considerable number of ethnic Tamils, particularly women, work as pesticide sprayers. Journalists and other employees of *Nanban* were briefed by the Syngenta General Manager and a medical doctor in the company's employment that paraquat was safe to use. (*Malaysian Nanban*, 9 October 2002)

Corporate Philanthropy And Csr

In the 1970s, Milton Friedman, the economist wrote in a *New York Times Magazine* article that businesses had no business doing anything but generating profits. Friedman complained that corporate social responsibility costs a company money. But such thinking has changed. Today corporations contribute to various causes. Homelessness, hunger, ethical business, achieving the UN's Millennium Development Goals (MDGs), protecting the environment are all on the radar screen of corporate philanthropy.[18]

In 2005, Syngenta contributed US$8.2 million in sponsorships and donations to local communities.[19] Philanthropy and social responsibility go beyond charity and welfare. If a corporation uses its philanthropic giving for the purpose of

generating profits, it is a contradiction in terms of its social responsibility.

Corporate Foundations

Some businesses establish their own corporate foundations to manage their philanthropy programmes such as the Syngenta Foundation. The mission of the Syngenta Foundation for Sustainable Agriculture is: *"To increase opportunities and choice for poor rural communities in semi-arid areas to improve their livelihoods through sustainable innovation in agriculture."*

The Foundation's activities focus on the various semi-arid regions of the world. The projects in Brazil, India, Mali, Kenya, and Uganda are aimed at food production and income generation, among others. The Garden for Life project in UK, Kenya and India appears interesting and is described as "a new international learning strategy that integrates a global dimension with school gardens" Are Syngenta's products promoted in these projects? If they are, it is imperative that there is disclosure about Syngenta products that may have found their way into the school projects.

Syngenta's philanthropy programmes will remain tainted as long as it continues with the production and marketing of the most toxic herbicide – paraquat.

The former managing director of the Syngenta foundation, Professor Klaus Leisinger, expressed in a letter to Berne Declaration in August 2002 concerns about the use of paraquat under smallholder conditions in developing countries.[20]

Self Regulation?

PriceWaterHouse Coopers (PWHC) was engaged to provide the independent assurance report on the Syngenta Group CSR Report 2005.

Obviously, the CSR standards of Syngenta are voluntary and self regulating. In a self regulating regime, a company can

continue to produce and promote a highly hazardous herbicide to developing countries – Paraquat and yet claim it has met its social responsibility to society and the environment!

The assurance report of PWHC on Syngenta's CSR performance in 2005 is a verification statement that covers compliance with its own parameters on CSR.

Compliance

Compliance within a self-regulating regime is based on what has been defined as corporate social responsibility by the corporation. Independent verification and enforcement of internal CSR guidelines pose challenges. Who sanctions the corporation for non-compliance of its internal guidelines?

The UN Global Compact has been established to create a process to support the voluntary socially responsible behaviour of corporations. The OECD has recently revised its more established mechanism of the OECD Guidelines for Multinational Enterprises. The European Code of Conduct for European Enterprises Operating in Developing Countries is a further voluntary approach which incorporates a platform for public airing of cases. Many other bodies and industry groups have devised sectoral codes of conduct. So far these have failed to prevent continued abuses of corporate power.

The practice of transparency and accountability is always weak when corporate social responsibility is based on voluntary initiatives which can be positive or deceptive. Internal guidelines for CSR are defined by the company and therefore are "top down". They do not empower stake holders like plantation workers and farmers who use paraquat. There is no substitute for mandated rules established on a framework of rights and duties of all stakeholders.

Voluntary initiatives do not provide mechanisms for adversely affected stakeholders (such as pesticide sprayers whose health is affected) to obtain redress through exercising their rights.

The UN General Assembly's special session to review progress since the 1995 Copenhagen World Summit for Social

Development identified the need to support corporate social responsibility by setting a legal framework. In General Assembly resolution S-24/2 of 1 July 2000 it called for: "encouraging corporate social responsibility by fostering awareness about the relationship between social development and growth, by providing a legal, economic and social policy framework to promote corporate social responsibility".

The Preparatory Committee for the Development of a Strategic Approach to International Chemicals Management (SAICM) has proposed a set of principles and approaches within the context of chemicals management.

These principles are: [21]

- Intergenerational equity as set out in the Rio Declaration on Environment and Development.
- Precaution set out in Principle 15 of the Rio Declaration.
- Internalization of costs such as polluter pays as set out in Agenda 21.
- Public participation as set out in the Rio Declaration.
- The right to know as set out in the Rio Declaration.
- Good governance as set out in the United Nations Millennium Declaration and the Johannesburg Plan of Implementation.
- Cooperation among states as set out in the Rio Declaration.
- Liability and compensation instruments as recommended in the Stockholm Declaration on the Human Environment, the Rio Declaration and the United Nations International Law Commission's work on transboundary harm.

A corporate social responsibility framework must be built on the principles of fundamental human rights and the principles of SAICM, with robust mechanisms for implementation, monitoring and sanctions. Stakeholders who are adversely affected by the activities of corporations such as pesticide sprayers must be able to seek redress. Such a framework will phase out paraquat globally.

Socially Responsible Corporations Reject Products Cultivated with Paraquat as a Weed Control Agent

Since the launch of the campaign "Stop Paraquat" in October 2002, the following corporations (Berne Declaration, 2003) have taken actions to support a world – wide stop of paraquat production:

- Chiquita decided that in the cultivation of Chiquita bananas Paraquat must not be used any more, since there are less toxic alternatives.
- Swiss wholesaler Migros decided that, beside bananas, it will not sell palm oil products anymore, as paraquat is used in its cultivation.
- The umbrella organisation of the certification organisations of fair trade decided that certified enterprises are not allowed to use Paraquat.
- Also in forestry, Paraquat comes increasingly under fire: Wood with the world-wide sustainability label "Forest Stewardship Council" (FSC) has to be produced Paraquat free.
- Also important Swiss coffee commercial house VOLCAFE does not use Paraquat anymore on their own coffee plantations. To Berne Declaration VOLCAFE said: "It is our opinion that Paraquat is not an up-to-date product for weed control anymore. Against the product speaks in particular about its toxicity, which represents a high risk for the users, and in addition about economic considerations. Today there are alternatives, which are more favorable and safer. Paraquat stands also on the black list of the Rainforest Alliance."

The Way Ahead

Alternatives

WHILE weed control is inseparable from agriculture, the primary principle that must prevail is that it should not damage human health and the environment. Chemicals that cannot pass this simple test must not continue to be applied in defiance of the basic principles of safety and ecological soundness.

A brief sampling of studies on the alternatives to paraquat will show that there are many examples in the agricultural world of chemical-free cultivation to draw upon. Labrada (2003) notes that an area of over 8 million hectares worldwide is farmed organically, with no use of synthetic herbicides at all.* Alternatives are also part of Integrated Pest Management (IPM), which reduces the use of pesticides as much as possible. The IPM Danida project in Thailand has a very clear standpoint regarding the use of paraquat in IPM: "The most dangerous chemicals, including all Class Ia and Ib pesticides and paraquat should be banned immediately. They have no place in IPM because less risky alternatives are available."*

More proof of viable alternatives to paraquat being used by small farmers and in plantations is provided by millions of hectares of timber certified by the Forest Stewardship Council, the Rainforest Alliance (banana, coffee, citrus, cacao) and the Fairtrade Labelling Organizations (coffee, tea, cocoa, sugar, honey, banana, fruit, vegetables, rice, wine, nuts, oilseed, flowers and cotton).*

Further, the view that alternatives to chemical weed control are not as effective need to be examined critically. Paolo Berberi (2003) points out that too much emphasis has been given to the development of weed control, especially synthetic herbicides, as the ultimate solution to all weed problems, while the importance of integrating different tactics (e.g. preventive, cultural, mechanical and chemical methods) in a weed management strategy based on the crop system has long been neglected.*

It should be emphasised that the most important step towards safe agricultural practices today will come about largely from a change in attitudes. In 1992, the British Medical Association advocated a change in philosophy in which "the question 'why not use pesticides' is replaced with the question 'why use pesticides?'"*

Given the enormous value of paraquat to the agro-chemical industry, the Malaysian government's support for plantation agriculture, its own stake in the sector through its conglomerates and agencies, and the official response to the issue so far, it would be no surprise if the effective date of the ban on paraquat were to be deferred yet again.

Nevertheless, the health and safety of workers is not a commodity to be traded against economic benefits, it is a fundamental right of workers everywhere to be safe from harm. It is therefore a moral obligation of the people to curb this greed for profits that sacrifices lives. If the politicians, bureaucrats, entrepreneurs and business managers have resources on their side, the millions of workers in the world have strength in their numbers. They must use that advantage to stop this abominable crime.

It is a fact that millions of agricultural workers and farmers worldwide continue to be exposed to the hazards of paraquat daily. For a meaningful change to this situation to take place, much could depend on what happens after you put this book down.

We can make a difference by beginning with ourselves. As consumers, we can stop buying products from businesses that use paraquat. As citizens, we can express our disapproval by speaking and writing about the issue and organising events to demonstrate that we will not allow our fellow human beings to be harmed by this poison. As voters, we can press our representatives to take a stand against this atrocity and use their legislative power to end the workers' suffering. As investors, we can use our stake to influence the decisions that businesses take on paraquat.

In the end, the remedy hinges on a fundamental belief in justice for all. We know that we must seek for others what we wish for ourselves.

'This is my little empire, Uma. I made it. I took it from the jungle and moulded it into what I wanted it to be. Now that it's mine, I take good care of it. There's law, there's order, everything is well run. Looking at it, everything here is domesticated, that all the parts have been fitted carefully together. But it's when you try to make the whole machine work that you discover that every bit of it is fighting back. It has nothing to do with me or with rights and wrongs: I could make this the best run little kingdom in the world and it would still fight back.'

'And what's the reason for that?'

'It's nature: the nature that made these trees and the nature that made us.'

'So you are saying then …' – Uma began to laugh, 'that some of your trees are rebels by instinct?'

'Not in so many words.'

'But Matthew, Uma laughed again, what on earth are you going to do if your tappers decide to take a lesson from your trees?'

Now it was Matthew's turn to laugh. 'Let's hope it never comes to that.'

The Glass Palace,
Amitav Ghosh

REFERENCES

Invisible Workers

1. Madeley, J. (2002), *Paraquat: Syngenta's controversial herbicide.* Zurich: Berne Declaration.
2. Syngenta Annual Report 2005
3. Pesticide Action Network Asia Pacific. (2006) Anti-paraquat campaign correspondence.
4. Tenaganita and Pesticide Action Network (PAN) Asia and the Pacific. (2002). *Poisoned and silenced: A study of pesticide poisoning in the plantation.*

Chapter One: Introduction

1. Syngenta website www.syngenta.com. In Madeley, J. (2002) *Paraquat – Syngenta's controversial herbicide*, Berne Declaration, Swedish Society for Nature Conservation, Pesticide Action Network UK, Pesticide Action Network Asia and the Pacific, Foro Emaus.

Chapter 2: Plantation Agriculture, Plantation Lives

1. Interview with authors, March-September 2006.
2. Interview with authors, March-September 2006.
3. Report on Malaysia Plantation Industries and Commodities, 2001-2005.
4. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia. Kuala Lumpur: S. Abdul Majeed & Co.*
5. Ibid.
6. Shamsul A.B. (2004). *From British to Bumiputera Rule. Institute of Southeast Asian Studies, Singapore.*
7. Ibid.
8. Krebs, A.V. (1992). *The corporate reapers: The book of agribusiness*. Washington DC: Essential Books.
9. Ibid.

10. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia.* Kuala Lumpur: S. Abdul Majeed & Co.
11. Ibid.
12. Ibid.
13. Interview with authors, March-September 2006.
14. Ali Qadir, (2001). *The State of Consumers in Pakistan – A Foundation Report.* In Josie, M. Fernandez. (2004). *Contested Spaced? : FOMCA's Engagement with the Government.* Petaling Jaya: FOMCA
15. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia.* Kuala Lumpur: S. Abdul Majeed & Co.
16. Arokia, D. (1991). Not beyond repair: Reflections of a Malaysian Trade Unionist (Niala, M. , Ed.). Hong Kong: Asia Monitor Resource Center Ltd.
17. Interview with authors, March-September 2006.
18. Baskar, J.P., Doss, M., & Senthivel, (2002). *In Search of Milk and Honey: Migrant Workers.* Tamil Nadu: PEACE TRUST.
19. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia.* Kuala Lumpur: S. Abdul Majeed & Co.
20. Interview with authors, March-September 2006.
21. Interview with authors, March-September 2006.
22. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia.* Kuala Lumpur: S. Abdul Majeed & Co.
23. Arokia, D. (1991). Not beyond repair: Reflections of a Malaysian Trade Unionist (Niala, M. , Ed.). Hong Kong: Asia Monitor Resource Center Ltd.
24. Interview with authors, March-September 2006.
25. Nadeswaran, R. (2006, September 7). Farewell 'Mr. Natural Rubber'. *TheSun,* 11.
26. Interview with authors, March-September 2006.
27. Interview with authors, March-September 2006.
28. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia.* Kuala Lumpur: S. Abdul Majeed & Co.
29. Tenaganita & Pesticide Action Network (PAN) Asia and the Pacific. (2002). *Poisoned and Silenced: A study of pesticide poisoning in the plantation.* Tenaganita & Pesticide Action Network (PAN) Asia and the Pacific.
30. Arokia, D. (1991). Not beyond repair: Reflections of a Malaysian

Trade Unionist (Niala, M. , Ed.). Hong Kong: Asia Monitor Resource Center Ltd.
31. Ibid.
32. Ibid.
33. Ibid.
34. Interview with authors, March-September 2006.
35. Arokia, D. (1991). Not beyond repair: Reflections of a Malaysian Trade Unionist (Niala, M. , Ed.). Hong Kong: Asia Monitor Resource Center Ltd.
36. Ibid.
37. Interview with authors, March-September 2006.
38. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia*. Kuala Lumpur: S. Abdul Majeed & Co.
39. Interview with authors, March-September 2006.
40. Arokia, D. (1991). Not beyond repair: Reflections of a Malaysian Trade Unionist (Niala, M., Ed.). Hong Kong: Asia Monitor Resource Center Ltd.
41. Ibid.
42. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia*. Kuala Lumpur: S. Abdul Majeed & Co.
43. Interview with authors, March-September 2006.
44. Selvakumaran, R. (1994). *Indian Plantation Labour in Malaysia*. Kuala Lumpur: S. Abdul Majeed & Co.
45. Ibid.
46. Jomo, K.S. (1988). *A question of class: Capital, the state, and uneven development in Malays*. : Monthly Review Press & Journal of Contemporary Asia Publishers.
47. Interview with authors, March-September 2006.

Chapter 3: Paraquat: Profits, Power and Perils

1. World Health Organization (WHO) & United Nations Environment Program (UNEP). (1990). *Public health impact of pesticides used in agriculture*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
2. Halweil, B. (2002). *Pesticide sales remain strong*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne

Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

3. Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
4. Dinham, B. (2003). *The Perils of Paraquat: Sales targeted at developing countries*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
5. Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph*. Penang: Pesticide Action Network Asia and the Pacific.
6. Chetley, A. (1986). *The Politics of Baby Foods: Successful challenges to an international marketing strategy*. London: Frances Pinter (Publishers) Limited.
7. Ibid.
8. Ibid.
9. Ibid.
10. Ibid
11. Bello, W. (2002). *Deglobalization: Ideas for a new world economy*. (Dhaka: University Press Ltd, Bangkok: White Lotus Co. Ltd, Nova Scotia: Fernwood Publishing Ltd, Bangalore: Books for Change, Cape Town: David Philip, London & New York: Zed Books
12. Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. Penang: Pesticide Action Network Asia and the Pacific.
13. EJF. (2002). *Death in Small Doses: Cambodia's Pesticide Problems and Solution*. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. Penang: Pesticide Action Network Asia and the Pacific.
14. Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. Penang: Pesticide Action Network Asia and the Pacific.
15. Lutzenberger, J.A., & Halloway, M. (1998). *The Absurdity of Modern Agriculture*. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. Penang: Pesticide Action Network Asia and the Pacific.

16. Whorton, J. (1974). *Before silent spring: Pesticides and public health in pre-DDT America*. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.
17. Wildavsky, A.B. (1995). *But is it true?: A citizen's guide to environmental health and safety issues.* In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.
18. Laug, E.P., et al. (1950). Liver cell alteration and DDT storage in the fat of the rat induced by dietary levels of 1 to 50 p.p.m. DDT. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.
19. Lutzenberger, J.A., & Halloway, M. (1998). *The Absurdity of Modern Agriculture.* In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.
20. Ibid.
21. Dinham, B. (2003, June). The Perils of Paraquat: Sales targeted at developing countries. *Pesticide News, 60,* 6.
22. Ibid.
23. European Commission (2003). *Review report for the active substance paraquat.* In Dinham, B. (2003, June). The Perils of Paraquat: Sales targeted at developing countries. *Pesticide News, 60,* 6.
24. Dinham, B. (2003, June). The Perils of Paraquat: Sales targeted at developing countries. *Pesticide News, 60,* 6.
25. Madeley, J. (2002). *Paraquat – Syngenta's Controversial Herbicide.* Berne Declaration, Pesticide Action Network UK, Swedish Society for Nature Conservation, Pesticide Action Network Asia and the Pacific and FORO EMAUS.
26. Watts, M. & Macfarlane, R. (2003). Monograph on Paraquat, Penang, Pesticide Action Network Asia and the Pacific (PAN AP).
27. Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.
28. Wesseling, C. (2003). *Multiple Health Problems in Latin America.*

In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* Penang: Pesticide Action Network Asia and the Pacific.

29. International Labour Office (ILO). (2004). *Towards a fair deal for migrant workers in the global economy.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
30. International Labour Office (ILO). (2003). *ILO standards-related activities in the area of occupational safety and health.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
31. Wester RC, Maibach HI, Bucks DA, and Aufrere MB. (1984). In vivo percutaneous absorption of paraquat from hand, leg, and forearm of humans. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
32. Mandago, M. (1999). *OSH services to agricultural and farm workers.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
33. Finnish Institute of Occupational health (FIOH). (1999). *The most important risk surveys during the next three years.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
34. Matthews, G., Wiles, T., & Baleguel, (2003). *A survey of pesticide application in Cameroon.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
35. Hurst, P. (1999). *Safe use in Guatemala: Are industry projects effective?* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

36. Matthews, G., Wiles, T., & Baleguel, (2003). *A survey of pesticide application in Cameroon.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
37. Ibid
38. Ohaya-Mitoko G.J., Kromhout, H., Karumba, P.N., & Boleij, J.S. (1999). *Identification of pesticide exposure among Kenyan agricultural worker using empirical modeling.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
39. Maumbe, B.M., & Swinton, S.M. (2003). Hidden health cost of pesticide use in Zimbabwe's smallholder cotton growers. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
40. Wilson, C. & Tisdell, C. (2001). *Why farmers continue to use pesticide despite environmental, health and sustainability costs.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
41. Angehrn, C. (1996). *Plant protection agents in developing country agriculture: Empirical evidence and methodological aspects of productivity and user safety.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
42. Ibid.
43. Centre d'Etude et de Développement Agricole Cambodgien (CEDAC). (2004). *Pesticide use consequence in Cambodia.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
44. Yan, A.S., Keuk, K., & San, S. (2002). *A survey of the health effects of Pesticides Survey as part of a farmer field school exercise in Cambodia.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action

Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

45. IPM DANIDA (Danish International Development Assistance, Pesticide). (2004). *Health survey: Data of 123 farmers in Chainat.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
46. Ibid.
47. Angehrn, C. (1996). *Plant protection agents in developing country agriculture: Empirical evidence and methodological aspects of productivity and user safety.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
48. Tenaganita & Pesticide Action Network Asia and the Pacific (PANAP). (2002). *Poisoned and silenced: A study of pesticide poisoning in the plantation.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
49. Kishi et al. (1995). Relationships of pesticide spraying to signs and symptoms in Indonesian farmers. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
50. Chester G, Adam AV, Inkmann Koch A, Tuinman CP. (1990). *Field evaluation of protective equipment for pesticide operators in tropical climate.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
51. Huang J, Quiao F, Zhang L, and Rozelle S. (2000). *Farm pesticide, rice production and human health, Economy and Environment Program for Southeast Asia (EEPSEA).* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

52. Matthews G. (1996). Pesticide use in China – a health and safety concern. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
53. Giuffirda A, lunes RF, and Savedoff WD. (2001). *Economic and health effects of occupational hazards in Latin America and the Caribbean, Washington, D.C.:Inter-American Development Bank 2001.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
54. Organizacion Panamericana de la Salud (OPS 2002) in an e-mail from R. Isenring to Stop Paraquat, 4 October, 2006.
55. Murray D, Wesseling C, Keifer M, Corriols M, and Henao S. (2002). Surveillance of pesticide-related illness in the developing world: putting the data to work. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
56. Drucker A, Cowder B, Alvarado J, Gonzalez R, and Rubio O. (1999). Economic evaluation of the occupational health impact of agrochemical use in Yucatan, Mexico. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
57. Foro Emaus. (1998). *Bananas for the World and the negative consequences for Costa Rica.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
58. Atuniassi UR & Gandolfo MA. (2005). Periodic inspection of crop sprayers: results according to age sprayer. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
59. Friedrich T. (2000). *Agricultural pesticide application: concepts for improvements, Rome (Food and Agriculture Organisation*

of the United Nations). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

60. van Wendel de Joode BN, de Graaf IA, Wesseling C, and Kromhout H. (1996). Paraquat exposure of knapsack applicators on banana plantations in Costa Rica. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
61. Amador M. (1998). *Sad record for Limon: bananas that poison* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
62. Di Benedetto et al. (2000). *Institutional, economic and social factors that affect herbicide use in coffee production in Costa Rica, School for Field Studies*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
63. Cole DC. (1998). Human health and agroecosystems: making the links. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
64. (CE:) (2000) The California Endowment, Suffering in silence: a report on the health of California's agricultural workers. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
65. Bade BL. (1999). Is there a doctor in the field? Underlying conditions affecting access to health care for California farmworkers and their families, CPRC report, California: University of California. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
66. (CDPR:) (2001) California Department of Pesticide Regulation,

California Code of Regulations, Division 6: Pesticides and pest control operations (last updated in July 2001). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

67. Weinbaum Z, Samuels SJ, and Schenker MB. (1995). Risk factors for occupational illnesses associated with the use of paraquat in California. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
68. Ibid
69. van Wendel de Joode BN, de Graaf IA, Wesseling C, and Kromhout H. (1996). Paraquat exposure of knapsack applicators on banana plantations in Costa Rica. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
70. Organización Panamericana de la Salud (OPS). (2001). Exposición dérmica a plaguicidas en un bananera, San José, Costa Rica: OPS/Organización Mundial de la Salud. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
71. Hall AH & Becker CE. (1995). *Occupational health and safety considerations in paraquat handling.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
72. Wester RC, Maibach HI, Bucks DA, and Aufrere MB. (1984). In vivo percutaneous absorption of paraquat from hand, leg, and forearm of humans. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
73. Garnier R. (1995). *Paraquat poisoning by inhalation or skin absorption.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action

Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

74. Semple S. (2004). Dermal exposure to chemicals in the workplace: just how important is skin absorption? Occupational and Environmental Medicine 61(4). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
75. Williams RL, Aston RS, and Krieger RI. (2004). Perspiration increased human pesticide absorption following surface contact during an indoor scripted activity program. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
76. Garnier R. (1995). *Paraquat poisoning by inhalation or skin absorption.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
77. International Programme on Chemical Safety (IPCS). (1984). Paraquat and diquat, Environmental Health Criteria 39, Geneva. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
78. Blanco et al. (2005). Determinants of dermal exposure among Nicaraguan subsistence farmers during pesticide applications with backpack sprayers. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
79. Boleij JS, Buringh E, Heerderik D, and Kromhout H. (1995). *Occupational hygiene of chemical and biological agents, Amsterdam: Elsevier.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
80. Wesseling C, Hogstedt C, Picado A, and Johansson L. (1997).

Unintentional fatal paraquat poisonings among agricultural workers in Costa Rica: A report of fifteen cases. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

81. Proudfoot A.T. (1993). *Acute poisoning: Diagnosis and management, London.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
82. (PMRA:) Pest Management Regulatory Agency. (2004). Re-evaluation of paraquat dichloride, Ottawa. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
83. Branson, D.H. and Sweeney, M., Pesticide personal protective clothing, Reviews of Environmental Contamination and Toxicology, 122, 81-109, 1991.
84. Fenske, R.A., Use of Fluoroscent Traces and Video Imaging to Evaluate Chemical Protective During Pesticide Application. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
85. Dinham, B. (2003, June). The Perils of Paraquat: Sales targeted at developing countries. *Pesticide News, 60,* 6.
86. Routt Reigard MD and Roberts, J.R. (1999). *Recognition and Management of Pesticide Poisoning*. US EPA, 5th Edition.
87. Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
88. Ibid
89. Ibid
90. Garnier R. (1995). *Paraquat poisoning by inhalation or skin absorption.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
91. European Commission (EC). (2004). Consolidated version

of the Directive on Dangerous Subtances (67/548/EEC, 29th adaptation progress: Directive 2004/73/EC). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

92. Bismuth C, and Hall A. (1995). Pulmonary sequelae in poison survivors. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
93. Garnier R. (1995). *Paraquat poisoning by inhalation or skin absorption*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
94. Ibid.
95. Bismuth C, and Hall A. (1995). Pulmonary sequelae in poison survivors. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
96. Sirajuddin et al. (2001). Notification of occupational and work-related diseases and poisonings in Malaysia. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
97. Senanayake et al. (1993). An epidemiological study of the health of Sri Lankan tea plantation workers associated with long term exposure to paraquat. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
98. Ibid.
99. Zenz C. (1994). *Occupational medicine*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
100. Partanen et al. (2003). Workplace Carcinogen and pesticide

exposures in Costa Rica. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

101. Organización Panamericana de la Salud (OPS). (2002). Intoxicaciones por plaguicidas en Costa Rica: OPS/ Organización Mundial de la Salud. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
102. Organización Panamericana de la Salud (OPS). (2002). Subregistro de las intoxicaciones por plaguicidas, San José, Costa Rica: OPS/Organización Mundial de la Salud. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
103. Wesselling C, van Wendel de Joode B, and Monge P. (2001). Pesticide-related illness among banana workers in Costa Rica: A comparison between 1993 and 1996. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
104. Leveridge YR. (1998). Pesticide poisoning in Costa Rica during 1996. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
105. Wesseling C, Castillo L, and Elinder C-G. (1993). Pesticide poisonings in Costa Rica. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
106. Cantor A, and Young-Holt B. (2002). Pesticide-related symptoms among farm workers in rural Honduras, International Journal of Occupational and Environmental Health 8(1),41-45. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

107. Weinbaum Z, Samuels SJ, and Schenker MB. (1995). Risk factors for occupational illnesses associated with the use of paraquat in California. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
108. (CDPR:) (1998-2003). California Department of Pesticide Regulation. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
109. Davanzo et al. (2004). Agricultural pesticide-related poisonings in Italy: cases reported to the Poison Control Centre of Milan in 2000-2001). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
110. Bertsias GK, Katonis P, Tzanakakis G, and Tsatsakis AM. (2004). Review of clinical and toxicological features of acute pesticide poisonings in Crete (Greece) during the period 1991-2001. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
111. Papiris SA, Maniati MA, Kyriakidis V, and Constantopoulos SH. (1995). Pulmonary damage due to paraquat poisoning through skin absorption. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
112. Lings S. (1982). Pesticide lung: A pilot investigation of fruit growers and farmers during the spraying season. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
113. Lings S. (1982). Pesticide lung: A pilot investigation of fruit growers and farmers during the spraying season. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne

Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

114. Proudfoot AT and Dougall H. (1988). Poisoning treatment centre admissions following acute incidents involving pesticides. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
115. International Programme on Chemical Safety (IPCS). (1984). Paraquat and diquat, Environmental Health Criteria 39. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
116. Grant, HC. Et al (1980). Cerebral Damage in Paraquat Poisoning. *Histopathology 4:185-95*. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph*. Penang: Pesticide Action Network Asia and the Pacific.
117. Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph*. Penang: Pesticide Action Network Asia and the Pacific.
118. El-Demerdash FM, Yousef MI, and Elagamy EI. (2001). Influence of paraquat, glyphosate, and cadmium on the activity of some serum enzymes and protein electrophoretic behaviour. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
119. Láng G, Kufcsák O, Szegletes T, and Nemcsók J. (1997). Quantitative distributors of different cholinesterases and inhibition of acetylcholinesterase by metidathion and paraquat in alimentary canal of common carp. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
120. Di Marzio WD, Alberdi JL, Sáenz ME, Tortorelli. (1998). Effects of paraquat (Osaquat® formulation) on survival in male and female adults of Cnesterodon dcemmculatus (Pisces, Poeciliidae). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

121. Seto Y, and Shinohara T. (1987). Inhibitory effect of paraquat and its related compounds on the acetylcholinesterase activities of human erythrocytes and electric eel (Electrophorus electricus). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
122. Stine KE, and Brown TM. (1996). *Principles of toxicology*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
123. Vega Bolaños LO, Arias Verdés JA, Conill Diaz T, and González Valiente ML. (1997). Uso de plaguicidas en Cuba, su repercussion en el ambiente y la salud. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
124. Liou HH et al. (1997). Environmental risk factors and Parkinson's disease: a case-control study in Taiwan. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
125. Brooks Al, Chadwick CA, Gelbard HA, Cory-Slechta DA, Federoff HJ. (1999). Paraquat elicited neurobehavioural syndrome caused by dopaminergic neuron loss. Brain Res 823(1-2): 1-10. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph*. Penang: Pesticide Action Network Asia and the Pacific.
126. Fredriksson A, Fredriksson M, Eriksson P. (1993). Neonatal exposure to paraquat or MPTP induces permanent changes in striatum dopamine and behaviour in adult mice. Toxicol Appl Pharmacol 122(2):258-64. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph*. Penang: Pesticide Action Network Asia and the Pacific.
127. Thiruchelvam M, Brockel BJ, Richfield EK, Baggs RB, Cory-Slechta DA. (2000). Potentiated and preferential effects of combined paraquat and maneb on nigrostriatal dopamine systems: environmental risk factors for Parkinson's disease? Brain Res 873(2):225-34. In Watts, M. & Macfarlane, R. (2003).

Paraquat Monograph. Penang: Pesticide Action Network Asia and the Pacific.

128. Ibid.
129. Cory-Slechda, et al., (2005) Developmental Pesticide Exposures and the Parkinson's disease Phenotype, Birth Defects Research Part A: Clinical and Molecular Teratology 73(3), 136-139.
130. Sechi GP, Agnetti V, Pirreda M, Canu M, Deserta F, Omar HA, and Rosati. (1992). Acute and persistent parkinsonism after use of diquat, Neurology 42(1), 261-263. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
131. Bismuth C, and Hall A. (1995). Pulmonary sequelae in poison survivors. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
132. Hall AH and Becker CE. (1995). Occupational health and safety considerations in paraquat handling. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
133. Yamashita M, Yamashita M, and Ando Y. (2000). *A long-term follow-up of lung function in survivors of paraquat poisoning*. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
134. Ibid.
135 Arroyave ME. (1990). *Pulmonary obstructive disease in a population using paraquat in Colombia*. In In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
136. International Development Research Centre (IDRC). (2003). *Paraquat Intoxication (Colombia)*. Ottawa, Canada.
137. World Health Organization (WHO) and United Nations Environment Program (UNEP). (1990). *Public Health Impact of Pesticides Use in Agriculture*. Geneva. In Isenring, R.

(2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

138. Schenker M. et al. (2004). *Pulmonary Function and Exercise Associated Changed with Chronic Low Level Paraquat Exposure.* American Journal of Respiratory and Critical Care Medicine 170 (7) 773-779. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
139. Hoppin JA. et al. (2002). *Chemical Predictors of Wheeze Among Farmer Pesticide Applicators in the Agricultural Health Study.* American Journal of Respiratory and Critical Care Medicine 165 (5) 683-689. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
140. Food and Agriculture Organisation of the United Nations (FAO). (2003). Paraquat dichloride. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
141. Food and Agriculture Organisation of the United Nations (FAO). (2004). Pesticide residues in food: report of the 2003 joint FAO/who Meeting of Experts. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
142. Ibid.
143. Ribas et al. (1997-98). Genotoxic evaluation of the herbicide paraquat in cultured human lymphocytes, Teratogenesis, Carcinogenesis, and Mutagenesis. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
144. Segen JC (ed). (1992). *The dictionary of modern medicine.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN)

UK, Pesticide Action Network Asia & The Pacific (PAN AP).

145. US Environmental Protection Agency (EPA). (1997). Reregistration Eligibility Decision (RED): Paraquat Dichloride. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

146. Hall AH and Becker CE. (1995). Occupational health and safety considerations in paraquat handling. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

147. Food and Agriculture Organisation of the United Nations (FAO). (2003). Pesticide residues in food. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

148. Li S, Crooks PA, Wei X and de Leon J. (2004). Toxicity of dipyridyl compounds and related compounds. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

149. US National Toxicology Program (NTP). (2005). Testing status: methyl viologen. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

150. Wesseling C, Ahlbom A, Antich D, Rodriguez AC, and Castro R. (1996). Cancer in banana plantation workers in Costa Rica. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

151. Wesseling C, Antich D, Hogstedt C, Rodriguez AC, and Ahlbom A. (1999). Geographical differences of cancer incidence in Costa Rica in relation to environmental and occupational pesticide exposure. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users*. Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

152. Wesseling C et al. (2001). Paraquat in developing countries. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
153. Extoxnet (Extension Toxicology Network). (1996). Pesticide information profiles: paraquat. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
154. Ibid.
155. Cal EPA. (1993). Summary of toxicology data: paraquat dichloride. T931006. Medical Toxicology Branch, Department of Pesticide Regulation, California Environmental Protection Agency. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
156. Ibid.
157. Extoxnet (Extension Toxicology Network). (1996). Pesticide information profiles: paraquat. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
158. Wesseling C et al. (2001). Paraquat in developing countries. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
159. Tsatsakis AM, Perakis K, and Koumantakis E. (1996). Experience with acute poisoning in Crete. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
160. Vismara C, Battista V, Vailati G, and Bacchetta R. (2003). Paraquat induced embryotoxicity on Xenopus laevis development. In Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.
161. Waight JJ. Fatal percutaneous paraquat poisoning [correspondence]. (1979). Journal of the American Medical Association 242, p.472 (quoted by Garnier 1995 and Hall & Becker (1995)). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

162. Wesseling C et al. Unintentional fatal paraquat poisonings among agricultural workers in Costa Rica: a report of fifteen cases. (1997). American Journal of Industrial Medicine 32(5), 433-441. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

163. Cassidy N, and Tracy JA. (2005). Morbidity and mortality following inadvertent poisoning with decanted chemicals. Irish Medical Journal 98(6), 175-178. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

164. Wesseling C et al. (1993). Pesticide poisonings in Costa Rica. Scandinavian Journal of Work, Environment and Health 19, 227-235. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

165. Nagami et al. (2005). Hospital-based survey of pesticide poisoning in Japan, 1998-2002. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

166. Quijano II. (2002). Peasant movement on the Philippines, Kamukhaan: report on a poisoned village. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

167. Levin PJ et al. (1979). Pulmonary Effects of Contact Exposure to Paraquat: A Clinical and Experimental Study. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

168. (IPM DANIDA:) Danish International Development Assistance. (2003). Did you take your poison today? Bangkok.

169. Kishimoto T et al. (1998). [Lethal paraquat poisoning caused by spraying in a vinyl greenhouse of causing pulmonary

fibrosis with a hepatorenal dysfunction][Article in Japanese]. Nihon Kokyuki Gakkai Zasshi 36(4), 347-352. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

170. Gear AJ et al. (2001). Paraquat poisoning in a burn patient. Journal of Burn Care and Rehabilitation 22(5), 347-351 (discussion p.346).

17 PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From. **www.pan-germany.org**

172. Hettiarachchi, J. & Kodithuwakku, G.C.S. (1989). *Pattern of Poisoning in Rural Sri Lanka.* In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

173. Eddleston, M. (2000). *Patterns and problems of deliberate self-poisoning in the developing world.* In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

174. Hutchinson G et al. (1999). High rates of paraquat-induced suicide in southern Trinidad. In: Suicide & Life Threatening Behaviour. Vol. 29, No. 2, p.186-91. In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

175. Le Samoa. (2001). Paraquat and its connection with suicide. Le Samoa Headlines. 27 April to 3 May. In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

176. Eddleston, M. (2000). *Patterns and problems of deliberate self-poisoning in the developing world.* In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From**www.pan-germany.org**

177. PAN Germany. (2003). *Fact Sheet Paraquat and suicide.* From **www.pan-germany.org**

178. Dinham, B. (1996). *Active ingredient fact sheet: Paraquat.* In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

179. Booth, H. (1998). *Pacific Island suicide in comparative perspective.* In PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**

180. Tinoco, R., Tinoco, R., Parsonet, J., Halperin, D. (1993). Paraquat poisoning in southern Mexico. In PAN Germany. (2003). *Fact*

Sheet: Paraquat and suicide. From**www.pan-germany.org**

181. Wong, K.T. & NG, T.S. (1982). Paraquat Poisoning. *The Family Practitioner, 5(3),* 35-36
182. PAN Germany. (2003). *Fact Sheet: Paraquat and suicide.* From **www.pan-germany.org**
183. Department of Primary Industries and Fisheries. (2004). Queensland Government. *Broad Acre Field Crops: How Toxic are Your Herbicides on Your Property.*
184. Summers LA. (1980). The bipyridinium herbicides. London: Academic Press. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
185. Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
186. De Silva, C.D. et al. (1995). *Toxicity of Four Commonly Used Agrochemicals on Oreochromisnilaticus.* In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
187 Lang, G. et al. (1997). *Quantative Distribution of Difeerent Cholinesterases and Inhibition of Acetylcholinesterase by Paraquat in Elementary Canal of Common Car.*, General Farmocology 29 (1), 55-59.
188. Website on the Pesticide Information Project of corporative extension officers, Cornell University, Oregon State University, University of California and Institue of Environmental toxicology, Michigan State University.
189. Warner M.E. (1985). *An Environmental Risk Index to Evaluate Pesticide Programs in Crop Budgets.* Itacha NY, Dept. of Agric. Econ., Cornell University.
190. Ibid.
191. US EPA. (1997). In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).
192. Medley, J. (2002). *Paraquat - Syngenta's Controversial Herbicide.*

Berne Declaration. PAN UK, PAN AP, Swedish Society for Nature Conservation.

193. Ibid.

194. Cronenberg, E. (2006). *An Insider in Brussels: Lobbyists Reshape the European Union.* From **http://www.corpwatch.org/article.php?id=14119**

195. Watts M. (2005). Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow. Pesticide Action Network (PAN) Asia and The Pacific, Policy Research and Analysis.

196. Bollier D and Claybrook J. (1986). *Freedom from Harm: The Civilizing Infuence of Healty, Safety and Environmental Regulation.*

197. Roberts.D.M., Ayanthi K., Buckely N.A., Gamini M., Sheriff M.H.R., & Eddleston M. (2003). Influence of pesticide regulation on acute poisoning deaths in Sri Lanka. *Bulletin of the World Health Organization. 81,* 789-798.

198. Ibid.

199. International Programme on Chemical Safety (IPCS). (1991). Diquat, Health and Safety Guide No. 52. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

200. Ibid.

201. Ibid.

202. Food and Agriculture Organization of the United Nations. (1990). *International code of conduct on the distribution and use of pesticides (amended to include prior informed consent in Article 9 as adopted by the 25th session of the FAO conference in November 1989). In* Roberts, D.M., Ayanthi, K., Buckely, N.A., Gamini, M., Sheriff, M.H.R., & Eddleston, M. (2003). Influence of pesticide regulation on acute poisoning deaths in Sri Lanka. *Bulletin of the World Health Organization. 81,* 789-798.

203. Pesticide Action Network (PAN) International. (2003). Position paper of Pesticide Action Network (PAN) International on paraquat. In Isenring, R. (2006). *Paraquat: Unacceptable Health Risks for Users.* Berne Declaration, Pesticide Action Network (PAN) UK, Pesticide Action Network Asia & The Pacific (PAN AP).

Chapter Four: Battle Against Paraquat

1. Circular from the Pesticides Control Division of the Ministry of Agriculture and Agro-based Industries, Malaysia, September 19, 2006.
2. Information shared with PAN AP by staff members of the Pesticides Control Division, Malaysia.
3. Goldenman, G. and Rengam, S. (1988). *Problem Pesticides, Pesticide Problems.* International Organisation of Consumers Unions and Pesticide Action Network
4. Ibid
5. *New Straits Times,* April 1, 1985
6. Interview with authors, March-September 2006
7. *New Straits Times,* Sept 10, 1985
8. *New Sunday Times,* Sept 8, 1985
9. Letter from five workers of Minyak Estate, Batang Berjuntai district, Selangor state, Malaysia to the Managing Director of Socfin Berhad, October 7, 1986
10. Sahabat Alam Malaysia, *Workers' Campaign Against Paraquat.* In *Dirty Dozen Campaigner,* September 1989
11. Letter to Sarojeni Rengam from Ministry of the Environment, Finland, November 13, 1989
12. Education and Research Association for Consumers (ERA Consumer), *Violating the Pesticide Code, A Survey of Malaysia.* Pesticide Action Network Asia and the Pacific (PAN AP), 1989
13. Education and Research Association for Consumers (ERA Consumer), compilation of press reports, 1986-95
14. Rengam, S. V., (1998). *Harvesting Hope: Empowering Women in Pest Management.* Penang, Pesticide Action Network Asia and the Pacific
15. Arumugam, V. (1992) *Victims without Voice: A Study of Women Pesticide Workers in Malaysia.* Tenaganita and Pesticide Action Network Asia and the Pacific.
16. Ibid
17. Tenaganita and Pesticide Action Network Asia and the Pacific (2002). *Poisoned and Silenced: A Study of Pesticide Poisoning in the Plantations.*
18. Circular from the Pesticide Control Division of the Agriculture Department, Malaysia, August 2002

19. Gramoxone in Malaysia, press release by Syngenta, Basel, September 30, 2002
20. Paraquat campaign update, Dec 4, 2002 by Francois Meienberg of Berne Declaration
21. e-mail from Francois Meienberg, Berne Declaration to campaigners against paraquat, January 9, 2003
22. e-mail from Jennifer Mourin, PAN AP to Martha Olson Jarocki, PAN NA, April 17, 2003
23. Letter from Jennifer Mourin to Francois Meienberg and Bernhard Herold of Berne Declaration, January 2003
24. Letter to the Editor, *theSun,* June 19, 2003
25. "Respect Government's Decision to Ban Paraquat, letter by Sarojeni Rengam, PAN AP to the *Star,* Oct 2002
26. Anil Netto, Malaysia lifts paraquat ban, IPS report, October 2006
27. Interview with authors, September 2006-10-30
28. Letter from M. Varataharajoo, Consumers Association of Klang to John McGillivray, Syngenta Crop Protection Sdn Bhd, November 21, 2002
29. Strong, M.B., Social and Health Impact of Pesticides in Perspective, Paper presented at Mardi conference on *Pesticides in Perspective,* Kuala Lumpur, July 6-8, 2005
30. Hansard of the Malaysian Parliament, November 15, 2005
31. Hansard of the Malaysian Parliament, November 15, 2005
32. Tenaganita (2005). Memorandum to Keep the Ban on Paraquat.
33. Call to reconsider ban on paraquat, *New Straits Times,* July 15,2003; Farmers seek revocation of decision to ban paraquat, *The Star,* July 15, 2003
34. Intervention of Bernhard Herold, Berne Declaration, at the General Assembly of Syngenta, Basel, April 29, 2003, about paraquat
35. *New Straits Times,* November 6, 2003.
36. Ibid
37. Ban on paraquat 'won't be lifted', *New Straits Times,* November 8, 2003
38. "NGOs and Trade Unions disappointed with EU's failure to ban dangerous pesticide Paraquat", Joint press statement by the European Environmental Bureau, Swedish Society for Nature Conservation, International Union of Food, Agricultural, Hotel

Restaurant, Catering, Tobacco and Allied Workers Associations, Friends of the the Earth Europe and Pesticides Action Network Europe, Brussels, Oct 3, 2003

Chapter 5: Corporate Social Responsibility

1. Post, James E., et al. *Business and Society. Corporate Strategy, Public Policy, Ethics. Ninth Edition.* McGraw-Hill.
2. Bankwala, Yazdi J. (2005). *Corporate Philanthropy and Social Responsibility*. Proceedings of Asia-Pacific Conference on Philanthropy as Social Investment.
3. Korten, David C. (1996). *Limits to the Social responsibility of Business.* The Peoples Centre Development Forum No.19.
4. Post, James E., et al. *Business and Society. Corporate Strategy, Public Policy, Ethics. Ninth Edition.* McGraw-Hill.
5. Clunies-Ross T. et al.. (1992). Green Fields Grey Future: EC Agriculture Policy at the Crossroads. Greenpeace International. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).
6. Neumeister, L. (2006). *Is Paraquat Useful for the Environment?* Berne Declaration.
7. Syngenta. (2005). *Corporate Social Responsibility progress report.*
8. Altieri M. (2004). Corporate Hijack of Sustain-able Agriculture. ISIS Press Release (16/11/04). The Institute of Science in Society. **http://www.isis.org.uk/CHSA.php**. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).
9. EJF. (2002). Death in Small Doses: Cambodia's Pesticide Problems and Solutions. Environmental Justice Foundation. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow.* PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).
10. Berne Declaration website. **www.evb.ch**
11. Ibid.
12. Ibid.
13. Ibid.
15. Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger,*

Reaping Sorrow. PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).

15. US EPA. (1997). Paraquat Dichloride. Registration eligibility decision (RED). US Environmental Protection Agency. EPA 738-F-96-018. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).
16. Dinham B. (1999). Impact of Corporate Control – The Pesticide TNCs. In: Nair KP. (1999). Warning: Pesticides are Dangerous to Your Health! Stop Endocrine Dsirupting Chemicals. Pesticide Action Network Asia and the Pacific. In Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).
17. Roundtable on Sustainable Palm Oil (RSPO). (2005). *RSPO Principles and Criteria for Sustainable Palm Oil Production. Public Release Version.*
18. Weeden, Curt. (1998). *Corporate Social Investing. The Breakthrough Strategy for Giving and Getting Corporate Contributions*. Berrett-Koehler Publishers, Inc.
19. Syngenta. (2005). *Corporate Social Responsibility progress report.*
20. Berne Declaration website. **www.evb.ch**
21. Preparatory Committee for the Development of a Strategic Approach to International Chemical Management. (2005). *Overarching Policy Strategy.* Strategic Approach to International Chemicals Management (SAICM).

Print Media

The following newspapers provided a wide range of reports form 1985 to 2006 that were used in this book :

New Straits Times
The Star
The Malay Mail
theSun
Berita Harian
Utusan Malaysian
Malaysian Nanban
Tamil Nesan

BIBLIOGRAPHY

Award for Paraquat Sprayers Who Retired Early. Suara SA, August. (1986)

Abdul Rahman Embong. (2004). *Globalisation Culture & Inequalities.* Penerbit Universiti Kebangsaan Malaysia.

Association of the Chartered Certified Accountants. (2005). *Sustainability Reporting Guidelines for Malaysian Companies.*Kuala Lumpur: The Association of the Chartered Certified Accountants.

Action Group for Erosion, Technology and Concentration (ETC Group). (2005). Global Seed Industry Concentration-2005.

Bek-Nielsen, B. (1985). Perak. Speech at the presentation of workers benevolent fund to retired workers at Jendarata Club, Jendarata.

BIOTHAI, GRAIN, MASIPAG, PAN Indonesia. (1999). *Whose Agenda? The Corporate Takeover of Corn in SE Asia.*

Bello, W. (2002). *Deglobalization. Ideas for a New World Economy.* Zed Books Ltd.

Berne Declaration Press Release. (2004) April 27. *Paraquat Criticism: Syngenta Turns a Deaf Ear.*

Beaumont, P. (1993). *Pesticides, Policies and People. A Guide to the Issues.* London. The Pesticides Trust.

Baskar, J. Paul. (2002). *In Search of Milk and Honey: Migrant Workers.* Tamil Nadu. Peace Trust.

Baumslag, N., Michels, Dia L. (1995). *Milk, Money and Madness. The Culture and Politics of Breastfeeding.* Pune. The Other India Press.

Bollier, D., Claybrook, J. (1986). *Freedom from Harm. The Civilizing Influence of Health, Safety and Environmental Regulation.* Public Citizen and Democracy Project.

Chan, K.W., Cheong, Izham, K.S. (1982). *Paraquat Poisoning: A Clinical and Epidemiological Review of 30 Cases.* Medical Journal Malaysia, Vol.37, No.3, September.

Chetley, A. (1986). *The Politics of Baby Foods. Successful Challenges to an International Marketing Strategy.* London. Frances Printer (Publishers) Limited.

Consumers Association of Penang (CAP). (1997). *State of the Environment in Malaysia. A compilation of selected papers presented at the CAP-SAM National Conference.* Penang. CAP.

Cronenberg, E. (2006). *An Insider in Brussels: Lobbyists Reshape the European Union.* From **tttp://www.corpwatch.org/article.php?id=14119**

Chester, G., Woollen, B.H. (1981). *Studies of the Occupational Exposure of Malaysian Plantation Workers to Paraquat.* British Journal of Industrial Medicine.

Dass, A. (1991). *Not Beyond Repair. Reflections of a Malaysian Trade Unionist.* Hong Kong. Asia Monitor Resource Centre Limited.

Dinham, B. (2003, June). The Perils of Paraquat : Sales targeted at developing countries. *Pesticide News, 60, 6.*

Education and Research Association for Consumers Malaysia (ERA Consumers). *Aerial Spraying Report and Memorandum.* Submitted to Perak State Government, Ministry of Science, Technology and Environment, Ministry of Agriculture, Ministry of Health, Ministry of Domestic Trade and Consumer Affairs.

Friends of the Earth International (FOEI). (2002). *Towards Binding Corporate Accountability. FOEI Position Paper for the WSSD.* **www.foei.org/corporates**

Fernandez, Josie. (2005). *Local Situation, Global Relationships: Campaign Against Paraquat.* Case Study for WEMOS Foundation for training on public-private partnerships. Unpublished.

Gomez, Edmund T. (1990). *Politics in Business. UMNO's Corporate Investments* Petaling Jaya. Forum Enterprise.

Gips, T. (1987). *Breaking the Pesticide Habit. Alternatives to 12 Hazardous Pesticides.* Penang. International Organization of Consumers Unions.

Habib, N. (1996). *Invisible Farmers in Pakistan. A Study on the Role of Women in Agriculture and the Impact of Pesticides on Them.* Penang. Pesticide Action Network Asia and the Pacific (PAN AP).

Hart, T.B. (1987). *Paraquat – a Review of Safety in Agricultural and Horticultural Use.* Human Toxicology: An International Journal, Vol.6, No.1. The Macmillan Press Ltd.

ICI Plant Protection Division. (1984). *Paraquat: Its Safety to Health and the Environment – A Summary.* Public Affairs Dept., Imperial Chemical Industries (ICI) PLC.

Iserning, R. (2006). Paraquat: Unacceptable Health Risks for Users.

Berne Declaration, Pesticide Action Network UK, Pesticide Action Network Asia & The Pacific

Jomo, K.S. (1988). *A Question of Class: Capital, the State, and Uneven Development in Malaya.* Monthly Review Press & Journal of Contemporary Asia Publishers.

Jomo K.S., Josie M.F. et al. (1984). *Early Labour: Children at Work on Malaysian Plantations.* Institute for Social Analysis (INSAN), Kuala Lumpur and Anti-Slavery Society for the Protection of Human Rights, London.

Jayaprakash, S. (1999). *National Realities on Women & Pesticide Issue in India.* Penang. Paper at the Regional Workshop on Women and Pesticides. Pesticide Action Network Asia & the Pacific.

Josie, M.F, Abdul Rahim Ibrahim. (2002). *A Giving Society? The State of Philanthropy in Malaysia.* Penerbit Universiti Sains Malaysia.

Kampschoer, V. et al. (1983). *The Road to Health is Paved With Tea-Leaves. Medical Care on Sri Lankan Tea Estates.* Sri Lanka Information Group.

Kaloyanova, Fina P., El Batawi, Mostafa A. (1991). *Human Toxicology of Pesticides.* Florida. CRC Press.

Kuyek, D. (2000). *The Pesticide Cartel,* Pesticide Action Network, Asia and the Pacific

Krebs, A.V. (1992). *The Corporate Reapers. The Book of Agribusiness.* Essential Books.

Laws of Malaysia. Act 149. Pesticides Act and Regulations. (2005). MDC Publishers Sdn. Bhd.

Madeley, J. (2002). *Paraquat – Syngenta's Controversial Herbicide.* Report for Berne Declaration, Swedish Society for Nature Conservation, Pesticide Action Network UK, Pesticide Action Network Asia Pacific, Foro Emaus.

Mitton, R. (1997). *'It's a Form of Slavery'. The Suffering Classes – Plantation Workers.* Asiaweek, March.

Macalester International, Vol.12. (2002). *Malaysia: Crossroads of Diversity in Southeast Asia.* Minnesota. Macalester College.

MAPA/NUPW Rubber Tappers' Wage Agreement. (2003).

Miller, J. (1985). *The Heroic Resistance, Survival & Triumph of Black Australia. Koori: A Will to Win.* Angus and Robertson Publishers.

MCPA. (2004/2005). Annual Report and Membership Directory, 2004/2005.

Nadarajah, M. (2004). *Another Malaysia is Possible and other essays. Writings on Culture and Politics for a Sustainable World.* Kuala Lumpur. National Office for Human Development.

Neumeister, L. (2006). *Is Paraquat Useful for the Environment?* Berne Declaration.

Pesticide Action Network (PAN) Asia and the Pacific. (2000). *Forging Our Future: Women in Agriculture.* Penang. PAN Asia and the Pacific.

Pesticide Action Network (PAN) International. (2003). *Position Paper of Pesticide Action Network (PAN) International on Paraquat.* PAN International.

Pesticide Action Network (PAN) International. (2006). *Position Paper of Pesticide Action Network (PAN) International on Paraquat.*

Post, James E., et al. *Business and Society. Corporate Strategy, Public Policy, Ethics. Ninth Edition.* McGraw-Hill.

Press Reports of ERA's Efforts to Protect Consumers, Preserve the Environment and Promote Sustainable Development. ERA Consumers.

Pesticide Action Network Asia and the Pacific (PAN AP). (2005). *Women's Wisdom. Documentation of Women's Knowledge on Ecological Agriculture in the Philippines, Indonesia and Pakistan.* Penang. Pesticide Action Network Asia and the Pacific (PAN AP).

Pesticide Action Network Asia and the Pacific (PAN AP). (1999). *Warning: Pesticides are Dangerous to Your Health! Stop Endocrine Disrupting Chemicals!* Penang. PAN AP.

Pesticide Action Network Asia and the Pacific (PAN AP). (1999). *Profiting from Poison*. Penang. PAN AP.

Ramachandran, S. (1994). *Indian Plantation Labour in Malaysia*. Kuala Lumpur. Institue of Social Analysis. S. Abdul Majeed & Co.

Resistance Network Against Trafficking in Women and Children in South Asian Countries Press Statement. (1999). *SAARC Convention on Preventing and Combating Traficking in Women and Children.*

Revkin, Andrew C. (1983). *Paraquat. A Potent Weed Killer is Killing People.* Science Digest, June.

Roundtable on Sustainable Palm Oil (RSPO). (2005). *RSPO Principles and Criteria for Sustainable Palm Oil Production*. *Public Release Version.*

Roberts, Darren M. et al. (2003). *Influence of Pesticide Regulation on Acute Poisoning Deaths in Sri Lanka.* Bulletin of the World Health Organization, 81 (11).

Reigard, R., Roberts, J. (1999). *Recognition and Management of Pesticide Poisoning.* US EPA 5th Edition.

Revkin, Andrew C. (1983). *Paraquat. A Potent Weed Killer is Killing People.* Science Digest, June.

Shamsul A.B. (1986). *From British to Bumiputera Rule. Local Politics and Rural Development in Peninsular Malaysia.* Institute of South East Asian Studies.

Sarojeni, V. Rengam – Pesticides Action Network Asia and the Pacific (PAN AP). (2004) July 28. *RE: Concern Over Pesticides Advertisement in Thailand by Syngenta*. Letter to Mr. Jacques Diouf, Director-General, Food and Agriculture Organization (FAO) of the United Nations (UN).

Solh, M. – Director, Plant Production and Protection Division, FAO, UN. (2004) September 16. *RE: Concern Over Pesticides Advertisement in Thailand by Syngenta*. Response to letter from Sarojeni V. Rengam, Executive Director, PAN AP.

Southeast Asian Information Network (SAIN) Press Release. (1997) June 9. *European Companies Involved in Selling Poison to Burma.*

Sarojeni, V. Rengam – Pesticide Action Network Asia and the Pacific (PAN AP). (2003) September 15. *RE: Paraquat Issue.* Email interview with Shantini Suntharajah, Journalist, The Sunday Star.

Sheldon, T., (2005). *Contradictions in Corporate Social Responsibility. The Pharmaceutical Industry and Medicines for the Poor.* WEMOS Foundation.

Sarojeni V. Rengam. (1998). *Harvesting Hope. Empowering Women in Pest Management.* Penang. Pesticide Action Network Asia and the Pacific (PAN AP).

Syngenta Annual Report. (2005). Syngenta Corporate Social Responsibility Report.

Syngenta. (2005). *Corporate Social Responsibility progress report.*

Tenaganita, Pesticide Action Network Asia and the Pacific (PAN AP). (2002). *Poisoned and Silenced. A Study of Pesticide Poisoning in the Plantations*. Pesticides Action Network Asia and the Pacific (PAN AP).

University of Rochester. (2001). *UC Davis Study Investigates Health Effects of Paraquat, a Herbicide Commonly Used Throughout the World*. California. UCDHS Press Release.

US Environmental Protection Agency (EPA). (1997). *Paraquat Dichloride*. R.E.D Facts.

UBINIG & Pesticide Action Network (PAN) Asia and the Pacific. (2003). *'Bheesh': Poisoning of the Lives. Report on the Study on Women and Pesticides*.

White, J. (1997). *Agricultural Chemical Trespass Bill*. Wellington. New Zealand Government.

Wong, K.T., Ng, T.S. (1984). *Alleged Paraquat Poisoning in Perak*. Medical Journal Malaysia, Vol.39, No.1, March.

Whitaker, M.J. (1989). *The Handling and Use of Paraquat by Malaysian Rubber and Oil Palm Smallholders*. Journal of Plant Protection in the Tropics. Malaysian Plant Protection Society.

Watts, M. (2005). *Pesticides: Sowing Poison, Growing Hunger, Reaping Sorrow*. PAN AP Policy Research and Analysis, Vol.2. Pesticides Action Network Asia and the Pacific (PAN AP).

Weeden, Curt. (1998). *Corporate Social Investing. The Breakthrough Strategy for Giving and Getting Corporate Contributions.* Berrett-Koehler Publishers, Inc.

Whitehead, M. (1988). *Inequalities in Health. The Black Report and The Health Divide.* Penguin Group.

Watts, M. & Macfarlane, R. (2003). *Paraquat Monograph.* Penang: Pesticide Action Network Asia and the Pacific.

Zechariah, S. (1999). *Pearls of the Plantations.* Kuala Lumpur. Southdene Sdn. Bhd.

USEFUL WEBSITES

CropLife **www.croplife.com**

Cropwatch **www.cropwatch.org**

Environmental Protection Agency, US **www.epa.gov**

ETC Group **www.etcgroup.org**

Food and Agriculture Organization, UN **www.fao.org**

Foro Emaus **www.foroemaus.org**

International Labour Organization **www.ilo.org**

International Program for Chemical Safety
www.who.int/ipcs/en

Ministry of Agriculture, Malaysia **www.agrolink.moa.my**

Pesticide Action Network Asia and the Pacific
www.panap.net

Pesticide Action Network Germany **www.pan-germany.org**

Pesticide Action Network UK **www.pan-uk.org**

Rotterdam Convention on Prior Informed Consent
www.pic.int

Roundtable for Sustainable Palm Oil **www.rspo.org**

Stop Paraquat Campaign **www.stop-paraquat.net**

Swedish Society for Nature **www.snf.se**

Tenaganita **www.tenaganita.net**

World Health Organization **www.who.int**

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PARAQUAT is a deadly poison that is widely used in agriculture to control weeds. The World Health Organization describes it as "the only highly toxic herbicide of the post-war years." It has no antidote and poses serious hazards to humans and the environment. Paraquat's acute and chronic effects include lung damage, skin lesions, dermatitis and nose bleeds. It is linked to skin cancer and Parkinson's disease. Problems due to paraquat exposure are being seen in farms and plantations worldwide, from the US to Japan to Costa Rica to Malaysia.

This book confronts the unethical arguments used by Syngenta – the leading producer of paraquat – and parties with a vested interest in agribusiness, to extend the use of this toxic substance in the face of compelling evidence for its removal. It aims to awaken the conscience of its readers to the harm that is being done to farmers and agricultural workers, particularly in developing countries.

The story begins with the plight of pesticide sprayers in Malaysia's plantations, describing their powerlessness against the political and economic influence of corporations. This forms the backdrop to the campaign mounted by public interest groups to ban paraquat. The regulatory environment reveals the contrast between economic interests and the governments' duty to ensure that the people are free from harm.

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ISBN 983403755-4
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