

# Tobacco's Profit, Workers' Loss?

Tobacco products—cigarettes, cigars, snuff, and chewing tobacco—are well known to pose a serious environmental health threat both to consumers themselves and, in the case of secondhand smoke, to the people around them. Today, vigorous tobacco control activity around the world focuses on curbing tobacco use and, thus, its health effects on consumers. But the tobacco workers who labor to bring the plant to market face another range of environmental health risks—risks largely ignored in the long-running tobacco wars between profit and public health. And because most tobacco, especially in the developing world, is grown on small family farms, the majority of workers are self-employed and thus outside the reach of labor laws that might otherwise protect them.

## Tobacco International

In the United States, the federal government historically has encouraged tobacco agriculture. The U.S. Department of Agriculture (USDA) tobacco price support program sets an annual national quota restricting the amount of tobacco that can be grown to that estimated to meet annual domestic and export demand. For those farmers who hold quota allotments, this policy and an accompanying federal loan program keep market prices artificially high. Quotas can be leased and traded, and in recent years this has resulted in the concentration of quota allotments in fewer hands, creating some large-scale non-family farming operations.

But the struggle by the U.S. health establishment to reduce tobacco consumption finally turned the tide, culminating in massive tobacco litigation settlements beginning in 1997. The federal government is now phasing out support for tobacco farming. As U.S. tobacco consumption declines, the tobacco companies, the largest and most influential of which are multinational corporations, are moving both their production and their marketing efforts overseas.

The top three companies, Altria, British American Tobacco (BAT), and Japan Tobacco, have built new manufacturing facilities and encouraged the rapid expansion of tobacco agriculture in many countries, notably Brazil, Mexico, India, China, and Malaysia. Two-thirds of the world's tobacco is grown in just four countries: China, India, Brazil, and the United States. According to *Golden Leaf, Barren Harvest*, a 2001 report by the Washington, D.C.-based Campaign for Tobacco-Free Kids, tobacco production in developing countries grew by 128% between 1975 and 1998.

Traditionally, independent growers have sold their tobacco at annual auctions where tobacco companies compete to buy from many different growers. Under the auction system, tobacco companies do not always buy directly from farmers, but work through intermediary leaf brokers. Recently tobacco companies have begun to shift to a more vertically integrated system.

Altria subsidiary Philip Morris USA is encouraging farmers to sign contracts called “partnering agreements.” The contracts eliminate the leaf brokers and allow the growers to bring their crop to the company at their convenience rather than at a preset time as under the auction system, according to Philip Morris USA spokesperson Kim Farlow.

The contract system is predicted by many to further reduce the economic stature and autonomy of growers. As growers become more dependent on single tobacco companies, they are under more pressure to follow the companies' specifications as to pesticide use and other cultivation protocols. And even under the auction system, in developing countries there is very close collaboration between the tobacco companies and the leaf brokers. Both provide loans, fertilizers, seeds, pesticides, and other materials to growers.

Although there are international agreements and conventions affecting the tobacco industry, none directly address tobacco workers' environmental health issues. In 1999 the World Health Organization (WHO) began work on the Framework Convention on Tobacco Control (FCTC). For the 192 member countries of

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the WHO, the FCTC would encourage and supplement national tobacco control policies in the areas of advertising and sponsorship, package warnings and labeling, taxes, and smuggling. The FCTC underwent its last round of negotiations in February 2003 and is scheduled to be signed at the World Health Assembly in May 2003. But, says Ross Hammond, a consultant to the Campaign for Tobacco-Free Kids who attended the February meeting, "Farmworker health issues are not really a part of the FCTC negotiations, although there is a short section on using environmentally sustainable methods, which is more hortatory than anything else."

Nor are there any trade provisions addressing environmental health issues in tobacco agriculture per se. The portion of the World Trade Organization General Agreement on Tariffs and Trade that relates to tobacco omits environmental health issues, according to a World Trade

working in fields, acute and chronic health effects associated with mixing and applying pesticides, and respiratory problems including asthma and silicosis resulting from inhalation of field and tobacco dust and fungal spores. The one environmental health problem peculiar to tobacco work is green tobacco sickness (GTS), a form of nicotine poisoning that results from workers brushing against wet tobacco leaves. But the most controversial and serious environmental health issue in tobacco agriculture is pesticide use.

Pesticides are applied to tobacco several times over a growing season. According to the 1984 book *Environmental Management in Tropical Agriculture*, as cited in *Golden Leaf, Barren Harvest*, up to 16 applications of pesticides are required by BAT of its Kenyan contract farmers. Similar requirements for Brazilian farmers are alleged in *Hooked on Tobacco*, a report published in 2002 by the United Kingdom-based nongovernmental

Registry, chlorpyrifos exposure symptoms include headache, blurred vision, excessive salivation, muscle weakness, and sudden change in heart rate. 1,3-D is primarily used on soil nematodes. Breathing high doses can produce respiratory irritation, nausea, headache, and fatigue. The Department of Health and Human Services reasonably anticipates 1,3-D to be a carcinogen. An organophosphate insecticide, acephate can cause symptoms such as twitching, headache, salivation, diarrhea, difficulty breathing, and death, according to the National Pesticide Information Network at Oregon State University in Corvallis. Acephate is not considered highly toxic in low to moderate doses but is classified by the U.S. Environmental Protection Agency (EPA) as a possible human carcinogen. Maleic hydrazide is commonly applied to discourage offshoot growth. It is not considered acutely toxic, mutagenic, or carcinogenic by the EPA, but is a skin and eye irritant.

The true number of either acute or chronic pesticide poisonings globally is difficult to establish. In volume 43, number 3 (1990) of *World Health Statistics Quarterly*, J. Jeyaratnam wrote that "pesticide poisoning is almost exclusively a concern of the developing world" and estimated that 25 million pesticide poisonings occur every year in developing countries. *Golden Leaf, Barren Harvest* cited an estimate from the Brazilian NGO Serviço Brasileiro de Justiça e Paz that 300,000 people are poisoned annually in Brazil. In the United States, the National Institute for Occupational Safety and Health (NIOSH) estimates there are 10,000 physician-diagnosed pesticide poisonings annually. Some researchers believe all official figures drastically underestimate incidence by a factor of five, at minimum.

One of the more controversial allegations in *Hooked on Tobacco* is that organophosphate pesticides have triggered suicides in Brazilian tobacco workers. The report cited work by Letitia Rodrigues da Silva, Linine Carvalho, and others with the Interdisciplinary Group for Research and Action in Agriculture and Health, a research organization affiliated with Brazil's Federal University of Rio Grande do Sul, showing that the suicide rate among Brazilian tobacco workers between 1979 and 1995 was almost seven times the rate for Brazil as a whole, and that the worker suicides occurred at times corresponding to the highest use of pesticides in spraying and harvesting the crop or preparing the next year's crop in greenhouses. Two-thirds of the people in the study who committed suicide worked on tobacco farms. Souza Cruz, a BAT subsidiary that contracts with most Brazilian growers, responds to the claim on the BAT website



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—Campaign for Tobacco-Free Kids

Organization spokesperson who requested anonymity. Likewise, the North American Free Trade Agreement eliminates all tariffs and fees on tobacco imported from Canada and Mexico. But it is unlikely to affect enforcement of labor or environmental standards under which environmental health issues would likely be decided, according to Arnold Hamm, assistant general manager of the Flue-Cured Tobacco Cooperative Stabilization Corporation, a farmer-owned marketing association in Raleigh, North Carolina. And aside from the remaining large-scale tobacco farms in the United States employing migrant labor, most tobacco farms are small, family-owned operations and probably beyond the reach of national labor regulations and labor conventions administered by the International Labour Organization.

### Tobacco Work and Health

About 33 million people worldwide work in tobacco cultivation, according to the 2000 book *Tobacco Control in Developing Countries*. Tobacco workers are vulnerable to the same kinds of injuries and diseases encountered by any other agricultural worker—accidents with farm machinery or tools, heat exhaustion and heat stroke from

farms are not very mechanized. Tobacco farming requires an estimated 3,000 hours of work per year per hectare, compared with only 265 hours for maize, according to "A Poison Crop—Tobacco in Brazil," an article published in the June 1998 issue of the *Global Pesticide Campaigner*. More time in the field means more chances for exposure. And protective gear is not always practical, particularly in the developing world, where many tobacco farms are in subtropical climates. For those farmers, wearing the gear could mean suffering heat stroke.

Although there are no pesticides that are used exclusively on tobacco, certain pesticides are used very heavily. Aldicarb, chlorpyrifos, and 1,3-dichloropropene (1,3-D) are commonly used on tobacco around the world, according to *Golden Leaf, Barren Harvest*. Acephate is also used heavily on tobacco, says Hammond.

Aldicarb is a systemic insecticide used on soil nematodes, insects, and mites. It is acutely toxic, causing dizziness, diarrhea, vomiting, blurred vision, temporary paralysis of the extremities, difficulty breathing, and excessive perspiration. Chlorpyrifos is an organophosphate insecticide, a class of compounds that interfere with nerve impulses. According to the Agency for Toxic Substances and Disease

with the comment, "We are not familiar with the concerns expressed by Christian Aid's experts, and we would welcome an opportunity to discuss this subject further with Christian Aid."

High exposure to organophosphate pesticides is well known to lower cholinesterase levels, resulting in neurological problems such as muscle weakness, convulsions, and mental confusion. A number of scientific studies also suggest there may be a connection between organophosphate exposure and suicide. However, a clear link remains questionable, in part because pesticide ingestion is a common way to commit suicide whether or not the suicidal person has been exposed prior to the fatal event. It is also not clear whether some tobacco worker suicides may be triggered by despondency over insurmountable debt, rather than by the pesticides themselves.

As part of its 2000 review of Gulf War syndrome, a National Academies of Science report, *Gulf War and Health: Volume 1. Depleted Uranium, Pyridostigmine Bromide, Sarin, and Vaccines*, analyzed 16 peer-reviewed studies of both chronic and acute pesticide exposures. The report included the review because the action of organophosphate pesticides is similar to that of the poison gas sarin, to which troops in the 1991 Gulf War may have been exposed. The report found that acute exposures "are associated with longer-term increases in reports of neuropsychiatric symptoms and poorer performance on standardized neuropsychological tests." It further found that chronic exposure was associated with increased symptom reporting, but that for chronic exposures there was "no association with the occurrence of suicide."

GTS symptoms are very similar to those of pesticide poisoning, making diagnosis of either more difficult. GTS is essentially nicotine poisoning through dermal absorption. Nicotine, a water-soluble alkaloid, collects in dew and rainwater on the leaves of tobacco plants in the fields. As workers move among the wet plants, they absorb nicotine directly through their skin. The symptoms of GTS include nausea and vomiting, headache, dizziness, blood pressure fluctuation, and abdominal cramping. The symptoms usually occur within a few hours of exposure and subside in 1–3 days.

In a project funded by NIOSH, a research team including Wake Forest University investigators Tom Arcury and Sara Quandt investigated the best way to prevent GTS among migrant tobacco workers during the 1999 growing season. They found that the best method was for workers to wear clothing with long sleeves and pants and to change out of wet clothes as soon as possible. In 1993, NIOSH issued a warning to tobacco

harvesters to wear protective clothing such as chemical-resistant gloves, aprons, and rain gear after 47 people sought emergency care for GTS in a five-county area of Kentucky over a two-month period.

### Regulatory and Company Roles in Worker Health

Pesticide application in the United States is highly regulated by the EPA, the Occupational Safety and Health Administration, and state agriculture departments. "Pesticide application safety has improved greatly over the years," says Hamm. Even so, a 2001 study of migrant tobacco workers by master's degree candidates at Murray State University found that 70% reported exposure to chemicals, and of those, about 58% did not know the names of the chemicals they used.

There is some controversy as to how much tobacco companies influence the type and quantity of pesticides used. In the United States, Farlow says, "[Philip Morris USA doesn't] get into which kinds of pesticides [farmers should use]. We don't get into the growing practices at all. We expect the farmer to grow the tobacco in keeping with standard agricultural practices." Farlow adds that farmers are encouraged to consult their local extension agents for information on safe pesticide use.

The extent of workers' understanding of proper application procedures and use of protective clothing is also in dispute. Less than half the migrant workers studied by the Murray State University students had received training in pesticide application. Although Souza Cruz spokesperson Mair Neto says the company provides information, training, and protective clothing to its contract farmers, *Hooked on Tobacco* questions whether "toxic pesticides can be used safely . . . where there is little evidence that farmers are fully aware of the risks."

Souza Cruz does not say whether it requires pesticide use, although Neto says the company will buy organic tobacco at the same price it pays for tobacco grown with pesticides, provided it meets grade standards (a claim that is disputed by Christian Aid). Even if tobacco companies do not literally force growers to use pesticides, in the developing world many have a financial interest in their use. According to "A Poison Crop," tobacco and leaf companies active in the Rio Azul district of Brazil receive nearly \$2 million a year just from sales of pesticides and fertilizers to farmers.

Neto says Souza Cruz recommends using less-toxic pesticides, including imidacloprid, clomazone, and acephate. Amounts used on BAT tobacco have been reduced to 1.4 kilograms of active ingredient per hectare, Neto

adds, citing for comparison a USDA figure of 55 kilograms per hectare on U.S. tobacco.

The USDA National Agricultural Statistics Service was unable to confirm this figure or provide an amount specific to tobacco. The USDA Economic Research Service's *Production Practices for Major Crops in U.S. Agriculture, 1990–97* indicates about 1.8 kilograms per hectare of active ingredient were used on all U.S. croplands.

### Fighting An Uphill Battle

Environmental health issues for tobacco farm workers are imperfectly characterized and poorly understood. But NGOs have begun bringing the risks to light, and researchers are working on establishing the true prevalence and risks of the two major issues, GTS and pesticide exposures.

Critics of tobacco agriculture vary in their recommendations for mitigating its environmental health problems. *Golden Leaf, Barren Harvest* advocates funding alternative crops for farmers and eliminating tobacco altogether. "A Poison Crop" reports discussions among Brazilian farmers about shifting to sustainable and/or organic methods, but remains skeptical that tobacco companies would want to buy organic tobacco because they would lose profits from pesticide and fertilizer sales. Christian Aid advocates an epidemiological study of tobacco farmers' health and a study of the interaction between GTS and pesticide residues in exposed workers. In Brazil, publication of *Hooked on Tobacco* has led to talks between Christian Aid's local NGO partner and Souza Cruz about improvements for workers, according to report author Andrew Pendleton. But, adds Pendleton, Christian Aid "remains skeptical" about BAT's commitment to "responsible" business practices because "aside from [BAT's] wanting to talk to us, we have yet to see any real action."

Even though the FCTC does not speak directly to tobacco workers' environmental health risks, full ratification of the FCTC might give impetus to efforts to assess and mitigate such risks. But it is not clear whether the FCTC will actually be ratified. The February negotiations were called "rancorous" in an 8 March 2003 editorial in *The New York Times*, and of the ratification process scheduled for May, Hammond says that "it's going to be ugly."

Thus, given the difficulties of establishing the necessity and the right to control the substance responsible for the world's leading preventable cause of death, it is still an uphill battle to address the environmental health risks to the workers who nurture that substance from seed to harvest.

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