AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 36:34–42 (1999)

Women's Occupational Health in Globalization and Development

Rene H. Loewenson, PhD*

Background: *The article describes the current process of globalization and its implications for development generally and for women, their work, and health.*
Methods: *The article outlines positive impacts in terms of enhancing employment opportunities in nontraditional spheres, and negative impacts in the growth of poor quality, insecure jobs with weakened social support systems. The case study of women's work within export processing zones is used to explore these conditions and their health impacts.*
Results: *The case study and other evidence provides a profile of work-related health that arises from a mix of patterns of employment, work processes, living conditions, and reproductive rights.*
Conclusions: *The observed problems are poorly recognized, poorly studied for their combined causes and outcomes, and poorly regulated. The article explores and reviews how the patterns of female employment affect women's ability to collectively confront the causes of ill health and the challenges to improving women's occupational health in these conditions.* Am. J. Ind. Med. 36:34–42, 1999.

KEY WORDS: womens health; occupational health; development

Women are half the world's population, receive one tenth of the worlds income, account for two thirds of the worlds working hours and own only one hundredth of the worlds property.

—International Labour Organisation

INTRODUCTION

Globalization and Development

There have been many paths for and models of ''development;'' more recently, the term has become inextricably linked with the process of ''globalization.'' Extremely rapid changes are taking place in the global economy. During the last two decades, world trade has tripled and global trade in services increased more than 14-fold. More than a trillion dollars roam the world every 24 hours, seeking the highest return [UNDP, 1996]. Globalization presents conditions and opportunities for ''boom or bust.'' While some countries have been able to use these opportunities to compete, globalization under liberalized markets has generally benefited the industrialized or strong economies and has marginalized the weak. The share of world trade to the poorest countries has fallen from 4% in 1960 to 1% in 1990, while investment flows have been concentrated in only about 10 countries (UNDP, 1996). A cycle of diminishing returns is set up where poor countries, marginalized from investments and markets, do not develop the capacity or exposure to engage in investment or trade. Poor countries often compete against each other to capture a small share of the market, driving downward the returns to trade through economic and labor market concessions. Debt consumes an increasing share of scarce domestic resources in many low-income countries, further reducing the possibilities for development. In spite of increasing levels of poverty, African countries continue to transfer US$10 billion a year to industrialized countries in debt repayment [Pearce and Matos, 1994].

Hence, despite optimistic assertions of ''an end to poverty'' in the 21st century, and adequate knowledge and technology to achieve this, poverty and inequality have in fact increased in many parts of the world in the 1990s. While

Training and Research Support Centre, Harare, Zimbabwe.
*Correspondence to: Dr. Rene Loewenson, TARSC, 47 Van Praagh Avenue, Harare, Zimbabwe.
Accepted: 1 March 1999

some countries have experienced spectacular economic advances, in others there has been unprecedented decline. Globally, the incomes of a quarter of the world's population have declined, a large share of these concentrating in sub-Saharan Africa [UNDP, 1996]. Poverty provides the context of poor housing, water supplies and sanitation, insecurity of employment, food, and incomes, and marginalization from social and communication infrastructures. Poverty has persisted even under conditions of GDP growth, signaling a further challenge of widening disparities in wealth and economic opportunity. In southern Africa, for example, the highest 20% of the population controls 10–20 times the share of income of the lowest 20% (UNDP, 1996). Hence, while aggregate resources exist to provide the basic needs of the people of even the poorest countries, sustained or widening economic inequality have undermined the *distribution* of these resources towards the health and development of the poorest.

The IMF/World Bank-supported stabilization and adjustment programs, introduced across many southern hemisphere countries, carried the aim of restoring and enhancing GDP growth. Structural adjustment as applied across over 40 African countries includes policy measures aimed at reducing budget deficits. Such measures include managed reductions in public expenditures to adjust domestic demand to the available level of external resources, reducing public sector employment, introduction of cost recovery, and privatization of parastatals. They also include various market, price, and institutional changes to liberalize the economy, such as increasing labor market flexibility, removing price controls and subsidies, trade and monetary liberalization, and currency devaluation to support export performance. While increased poverty was noted as a ''transitional price'' for such growth, in fact, structural poverty has increased. Structural adjustment programs have been followed by consistent declines in health and access to food, education, and other areas of social development, documented in countries across Africa and Latin America [Kanji et al., 1991; Loewenson, 1993; Cornia et al., 1987; Commonwealth Secretariat, 1989; Loewenson and Chisvo, 1994; Onimode, 1989; Cliff, 1991; Kalumba, 1991]. As the evident human cost of adjustment and liberalization mounted in the 1980s, so too did the call for ''a human face'' to adjustment, for considering negative gender aspects of adjustment, and for alleviating poverty. At another level, the unfolding experience of these macro-economic models revealed their insensitivity to local conditions and their inability to improve access to infrastructures and markets for a wider group of citizens. Under the banner of ''poverty alleviation,'' many countries have realized that poverty demands its own structural adjustment to enable the poor to produce more, to provide greater access to productive resources (including land and capital), to provide universal access to basic services, and to enhance infrastructures and markets for poor people.

Hence, development debates in the 1990s have been debates over ''growth first'' vs. equitable growth, over free market forces vs. solidarity, and over how economic imperatives are balanced against social (human) and environmental goals.

Women and Development

How have these changes affected women? While these development debates cover all countries and while poverty and marginalization exist even in the highest-income countries, in this article I will explicitly address the occupational health issues of women in the south, and specifically in southern Africa, as this is where I have experience. I have placed specific emphasis on direct experience as a source of information because one of the marked effects of inequality is for many people to fall out of databases, for the work they do and the problems they face to become less visible, and for their experiences to be poorly documented.

The social and economic marginalization of women is not a new phenomenon: it has been increasingly recognized, measured, and acted on in the 20th century, with some remarkable gains and some enormous impediments. Women have among the poorest social and economic status in many countries of the world, and among the weakest control over directing resources towards their needs. Households headed by women, estimated to be one-third of the total worldwide, are many times more likely to be poor than those headed by men, and the number of such households has increased after the introduction of structural adjustment and liberalization programs [Onimode, 1989]. In Zimbabwe, for example, while women account for 80% of the labor for all household and farm tasks and produce up to 70% of food crops [Johal et al., 1993], once a crop becomes lucrative to grow for the market, control often shifts to men. Hence, small stock are maintained by women while cattle (having greater capital and market value) are owned and controlled by men. As production for external markets has increased, so too has the control of these crops often shifted to men.

In the past, women's well-being has predominantly been measured in terms of reproductive outcomes. While this is an obviously restricted definition, even in this area we enter the 21st century with a huge gap between knowledge and practice. Half a million women die each year in childbirth, 99% of whom are in developing countries [Koblinsky et al., 1992]. The vast majority of these deaths are due to preventable causes. There are an estimated 62 million women globally suffering morbidity and long-term disability related to pregnancy and childbirth annually, the majority occurring in developing countries [Koblinsky et al., 1992]. The 1985 Nairobi International Conference on Women summarized a health situation that has not markedly im-

TABLE I. Gender Differences in Social Status, Sub-Saharan Africa

Parameter	1970	1980	1985	1990
Education: Primary first level enrollment ratio (%)				
Overall	90	97	103	105
Female	43	71	94	96
Male	100	107	112	113
Education: Secondary level enrollment ratio (%)				
Overall	8	19	23	26
Female	5	14	16	19
Male	11	24	30	34
Education: Tertiary level enrollment ratio (%)				
Overall	0.8	2	2	3
Female	0.3	0.6	1	1
Male	1	3	3	4
Literacy				
Overall			62	67
Female			55	60
Male			70	73

Source: Johal et al., 1993.

proved in the 1990s: ''Women in developing countries are often in poor health and overburdened with work; they are tired, most are anaemic, many suffer from malnutrition and parasitism and chronic ill health from lack of personal attention and adequate health care, especially during pregnancy and childbirth. Early marriage, repeated child bearing, ignorance, poverty and manual labour have all had deleterious effects. Women's special needs have often been ignored by health planners and women have thus had to bear a disproportionate share of unmet health needs'' [Smyre, 1992].

Gender disparities in social outcomes exist across regions, countries, and socioeconomic and age groups. There is evidence that such negative gender disparity begins at birth, and can outweigh even genetic advantages that girls have over boys, such as in infant mortality. In Zimbabwe, for example, gains in infant mortality have been slower in females than in males despite significant primary health care inputs for all children in the period [Jhamba, 1994]; while in some Asian countries, female children may even have higher infant mortality than male children, despite the genetic predisposition to the reverse [Smyre, 1992]. Table I indicates that while gender differences in social indicators in sub-Saharan Africa have been reduced over the last two decades, they have not disappeared.

These gender inequalities are most pronounced in developing countries. However, indicators of women's health show among the widest inequalities between north and south, and have in some cases widened under structural adjustment programs. The average lifetime risk of dying due to pregnancy-related causes in industrialized countries is 0.1–0.25/1,000, while for developing countries, it is between 20–66.6/1,000. Maternal mortality rates in developing countries are 200 times higher than those in Europe and the USA, among the widest disparities in all public health statistics.

The positive female–male difference in life expectancy is lower in developing than in industrialized countries, and, as indicated earlier, negative in some South Asian countries. Female life expectancy in the least developed countries is 52 years, 65 years in other developing countries, and 77 years in industrialized countries [Smyre, 1992]. Many of these inequalities in health are due to causes where the technology and resources exist to prevent morbidity and mortality.

While these avoidable inequalities persist between north and south, production, market, and trade policies are themselves increasing risks to women's health north and south. Gaps between male and female morbidity and mortality closed in the 1980s, for example, in the incidence of lung cancer, cardiovascular disease, and accidents, where female rates caught up to previously higher male rates as more women consumed health-threatening products and became involved in unhealthy work processes and lifestyles. This shift is also taking place in developing countries as the same commercial products (e.g., processed foods, cigarettes) are aggressively marketed.

What is it in the nature of the current development process that so deeply disadvantages women, and how does it influence their work-related health?

WOMEN'S WORK AND OCCUPATIONAL HEALTH

Features of Female Employment

One of the most important mechanisms by which economic growth is translated into wider gains in human development is through employment. This makes improvements in access to and quality of work and work-related health outcomes a critical aspect of the link between economic policy and social development. In both access to and quality of employment, the disadvantages women face are not unknown, even if they are poorly addressed.

First, women work longer hours: women work on average one to three times longer than men in the same society, whatever the number of hours men put in [Smyre, 1992]. One of the greatest contributors to this is the double workload. This dual burden of household work and work in other productive spheres is common north and south, but perhaps places the deepest stress on poor women, whose social support is weakest. Much of poor women's time is spent in meeting basic needs, such as fetching water and firewood and preparation of food, and in caring for depen-

dents [ZWB, 1994]. In Zimbabwe, for example, collecting water accounts for 20% of women's time and collecting fuel, 10% [Johal et al., 1993]. Women also spend a significant amount of time informally trading surplus produce. This domestic and social work is generally not valued as part of the domestic product, and thus assumes an invisible status and commands little investment in improved conditions. Women often work in undercapitalized and insecure production activities with inadequate access to credit, land, marketing and extension services, training, and other inputs [Johal et al., 1993].

While there is generally legal protection for gender equity in formal employment, in practice women continue to be employed in low-skill, low-paying jobs, in casual or non-permanent forms of employment, in jobs where unionization rates are low, and in certain sectors such as agriculture, textiles and clothing, food processing, domestic work, market activities, and social services. The work that women do is often strenuous, monotonous, ergonomically unsound, and involves little control over the job pace or content [Kothari and Nababsing, 1996]. Women are often regarded as supplementary wage earners, rather than workers in their own right. Reproductive health responsibilities (and the extent to which these are exclusively borne by women) are often a de facto constraint in hiring or investing in women workers, with employers regarding this as added cost; even the law may set no specific barriers to this [Jirira, 1990].

Hence, while the entry of women into the labor force has challenged traditional gender roles and has provided women with greater income opportunities, it has also cumulated productive and reproductive roles and led to decreased rest time.

The twin processes of globalization and marginalization described earlier have produced unequal effects on this pattern of female employment. On the one hand, the global spread of gender and human rights agendas, the enhancement of gender equity in employment law, and the widening of employment opportunities in non-traditional spheres of employment have brought more women into the workforce. On the other hand, there is evidence that much of the new formal employment for women is in poor quality work and assembly line processes with weak options for advancement and that, in the main, women have experienced a growth in insecure, casual employment. There has been an increase in out-contracted home-based work, which while enabling women to more easily meet their domestic duties, disguises the employment relationship and shifts liability for working conditions to the woman herself. Many more women have been brought into trading and informal sector work, in enterprises that are poorly regulated and excluded from support systems. Women's household tasks are also noted to take an increasingly longer time as water supplies dry up, forests become degraded, transport becomes more inconsistent and expensive, and competition for scarce resources intensifies. In my own region, women have borne a significant share of the burden of care of the high levels of illness, mortality and dependency caused by HIV/AIDS, often without the corresponding power to ensure the social and behavioral changes to prevent infection or the resource allocations to mitigate the impacts. The costs of unsustainable environmental and social practices have thus been shifted to poor women, making such costs less visible, and weakening the impetus for the investments needed to prevent them.

The phenomenon of women responding to an economic squeeze by working harder and longer is not confined to developing countries. A study in the USA found that the percent of working women holding two or more paid jobs went from 2.2% in 1970 to 5.9% in 1989, at the same time as the percent of men holding two jobs went down by 0.6% [Smyre, 1992]. While this may increase the economic contribution and importance of women, it may also increase the level of stress and its health consequences.

Female Employment in Export Processing Zones

Perhaps one of the most evident effects of globalization and liberalization on women's work and health, and a useful entry point for discussing the health impacts of women's work under current economic changes, is the experience of export processing zones (EPZs).

EPZs provide a number of economic concessions, in particular, tax and duty concessions to encourage foreign investment in export-oriented production and trade. EPZs have been introduced in many developing countries as a pathway to wider liberalization and ''integration'' into export markets. EPZs are now being introduced across a number of southern Africa countries, with Mauritius providing the longest experience of them. In Mauritius, EPZs contributed significantly to the growth of employment and incomes in the 1970s and 1980s, but these gains are now plateauing [SATUCC, 1997].

In Mauritius, as in many other countries, most EPZ workers are 18–25-year-old women. An ILO study notes that ''EPZ jobs are primarily unskilled jobs in highly labour intensive industries, occupied for the most part of young women who are entering the salaried labour force for the first time, and who tend to leave their EPZ job a few years later when they get married. The proportion of female workers in EPZ industries ranges on the average between 70 and 90 percent of the EPZ labour force, and appears to be totally unrelated to the participation rate of women in the manufacturing sector'' [ILO in SATUCC, 1997].

EPZs have increased the participation rate of women in industry, and women dominate the workforce in EPZs, especially in the electronics and textile industries, because EPZ companies consider female labor to be more docile and subdued than male workers, more likely to take orders, to

embrace company ethics, to accept lower pay, less inclined to join trade unions, and better able to perform monotonous, repetitious work. Single women are considered more productive due to less household responsibility.

Many young women who were recruited as EPZ workers would probably not have entered the formal labor market under different circumstances. Despite the low pay, EPZ employment was more attractive than the alternatives of staying at home, entering domestic service, or becoming agricultural workers. Wage employment in processing factories offers these young women at least some degree of economic independence. Hence, these women workers are given preferential access to jobs due to the exploitations of existing gender inequalities but have few alternatives of obtaining better jobs elsewhere.

Within the EPZs, female jobs usually involve labor-intensive assembly and finishing work and are rarely skilled jobs involving mechanized techniques. Male managers create employment strategies which allocate dead-end, manual jobs for women, while supervisory and leadership positions go to men. This reinforces women's roles as secondary workers, as their income is too low to assert themselves independent of their husbands and fathers. Thus, while EPZs open employment opportunities for women, they also reinforce and intensify traditional gender roles. When the jobs shift towards more skilled and technology-intensive work, so too does the employment towards more jobs for males.

While the production processes in EPZs are reported to involve common problems such as high levels of machine-related accidents, dusts, noise, poor ventilation, and toxic chemical exposure, there is an additional dimension of risk—that of high levels of job stress. A combination of accidents, stress, and intense exposure to other common hazards arises out of a common factor in many EPZs, that of unrealistic production quotas, productivity incentives, and inadequate controls on overtime that create pressures for highly intense work. When these problems are compounded by the fact that it is often young women who work in EPZs, they may affect reproductive health, leading to miscarriage, problems with pregnancies, and poor fetal health [Fuentes and Ehrenreich, 1994]. The stress generated in EPZ conditions have also been documented to produce cardiovascular and psychological disorders. Women in the Mauritian EPZs noted that the level of overtime they worked disrupted their family lives and contact with their children, leading to social problems in the youth [SATUCC, 1997].

These working conditions co-exist with infrequent government inspections and weak application of labor laws, leading to poor enforcement of whatever health and environmental standards do apply [US Dept. Labor, 1989/90]. Health problems may be underreported due to fears of job insecurity and due to high labor turnover, leading to many problems emerging after people have left their EPZ jobs. These conditions make the real level of occupational injury and ill health in EPZs difficult to ascertain. Restricted access to EPZs has also meant that there are relatively few surveys of workers' health in the zones.

These health costs extend beyond the factory floor. EPZ workers are sometimes accommodated in dormitory style hostels (e.g., in the Phillipines, Mexico, and Sri Lanka) that are crowded, with unhygienic water and sanitation, in poor quality structures [Kamel, 1990a,b] and with regulated access that undermines the privacy and autonomy of the workers. Some companies have been documented to offer prizes for women undergoing sterilization, to avoid time loss due to maternity [Fuentes and Ehrenreich, 1994]. These conditions provide a conducive environment for sexual harassment; women working in the zones have in many places become stigmatized, as EPZs are viewed as places of sexual promiscuity [Fuentes and Ehrenreich, 1994].

These conditions have also been associated with a weaker capacity of workers in EPZs to organize around their employment and health rights. The unionization rate among EPZ women workers is low, partly due to problems of union access, and partly as women workers have found union participation difficult due to job insecurity, output-related pay, domestic duties, and other aspects of EPZ work.

Occupational Health Outcomes of Women's Work

The experience of work and health in EPZs highlights some important features of women's occupational health in the current process of globalization.

1) The burdens of ill health that women face arise from the pattern of their employment, their working and living conditions, and their reproductive status and rights. These conditions are interlinked and the health problems they produce are often equally linked. Both scientific and insurance systems are poorly oriented to handle such interacting exposures and outcomes, as a result of which the hazards and health risks of women's work are significantly underestimated.
2) There is thus inadequate information on the combined pattern of occupational, public, and reproductive morbidity in women workers, and their relationship with employment patterns, various work processes, and social support systems.
3) Inadequate regulatory and inspection systems combine with employment insecurity and poor control over work to undermine hazard control.
4) Employment patterns and other social roles equally undermine women's collective organization to confront the conditions that undermine their health.

These features indicate a wider and deeper scope of gender-related work in occupational health, that includes, but goes beyond, the equation of women's occupational health with reproductive toxicity. In public health, our understanding of women's health has in the past been driven by a focus on fertility, its regulation and consequences. This has left some important gaps in our understanding of women's health, including:

1) How workload, nutrition, stress, social instability, and migration, among other socioeconomic conditions, affect women's health.
2) How female adolescent health can be enhanced to buffer future demands of energy-intensive activities such as manual work and childbearing.
3) Health problems of mature women, including menopause and aging.
4) Non-maternal, non-reproductive health needs during reproductive periods.

In occupational health, we need to look beyond issues of reproductive toxicity and examine the wider impact of women's different productive and reproductive roles on their occupational health.

This is not to undermine research on reproductive toxicity. Indeed, the relative paucity of such research (in relation to either sex) calls for more work to assess the full range of effects and of exposure to reproductive hazards at the workplace and makes this an important area of study [Klitzman et al., 1990]. Relatively few chemical and physical agents have been thoroughly studied for reproductive toxicity in both women and men.

Such research has a context, however. While there is evidence that those toxins that have been identified have other adverse effects on the health of adult workers, there is a tendency to characterize them as ''womens'' problems, given women's role in physically bearing children. One effect of this labeling has been an increase in employer policies excluding fertile or pregnant women from certain job categories. Concern over such exclusionary policies has grown as similar policies are not used to exclude men from employment when exposed to reproductive toxins, such as lead or DBCP. Hence, it is argued that such exclusionary policies may be applied not only as protection of the worker and fetus, but as a continued rationale for sex segregation of non-traditional jobs [Klitzman et al., 1990]. While this reinforces the principle that health and safety measures protect employment equity, it also raises the need to have a wider frame of reference for work on the health impacts of work in women that incorporates issues of the production process, employment patterns, and social and legal support for women workers.

The burdens of occupational morbidity that women face relate more to their patterns of employment than to any physiological sex differences. Women work in non-manufacturing occupations that often have the poorest monitoring and regulatory systems. Hence, a significant share of women's occupational morbidity is not routinely reported. Routine databases from southern Africa, for example, indicate a median reported annual injury rate for wage workers of 6.26 injuries/1,000 workers, and a median occupational fatality rate of 14.02 fatalities/100,000 workers. The highest risk sectors, forestry, electricity production, mining, basic metal production, nonmetallic mineral manufacturing, wood product manufacturing and transport, all with reported injury rates greater than 30 injuries/1,000 workers, are all sectors in which the likelihood of traumatic injury due to mechanical causes are higher and where women's employment is lower. Those sectors where illness or chronic morbidity due to chemical, ergonomic and psychosocial factors are greater have a significantly lower reported risk. Using the WHO/OGIEH [1996] estimated burden of occupational disease, it appears that the currently reported rates of occupational disease in southern Africa underestimate the real rates 50-fold. From the findings of ad hoc surveys in African countries, the health, textile, chemical, and agroindustrial sectors—all sectors with high female employment—are among those with a high surveyed prevalence of disease, even while they are presented as low risk in reported injury data systems.

Hazards that are common in sectors where women are employed, such as ergonomic hazards, repetitive manual work, indoor air pollution, and biological hazards, are often the last to be regulated. Conditions such as length of the working day, level of physical exertion, extent to which work is done or outside the home, exposure to chemical and physical hazards, and work postures have all been found as important factors in occupational morbidity of women workers. As small-scale farmers, women are exposed to agrochemicals often used with manual application techniques, poorly designed manual equipment, heavy loads, and sustained physical work. Urban informal sector workers are exposed to traffic fumes, ergonomic and social problems as street vendors, chemical and mechanical hazards in poorly managed manufacturing processes, benzene and aromatic amines in processes that recycle products such as tire retread workshops, and physical hazards in food processing and vending.

Many women are exposed to occupational hazards through wider environments in ways that are generally not recognized, nor insured. Air and water pollution provide common mechanisms for the wider impact of occupational risks, but so too do other practices, such as women washing work clothes, or migrancy in occupationally related communicable diseases. In the crocidolite mining districts of South Africa, for example, excess risk for mesothelioma was found in women as well as men, even though females were not employed in the mines until 1950. The conclusion was that

the impact was from environmental rather than occupational exposure [Packard, 1989]. Similarly, in Zimbabwe organophosphate pesticide exposure was observed in non-sprayers on large-scale farms and a high proportion of poisoning cases coming to hospital were women and children [Loewenson et al., 1991; Bwititi et al., 1987].

Women may face chronic health problems at work that interact with and exacerbate illness caused by the work they do in the home and in care of dependents. At the same time, women's poor health status arising from poor diet, inadequate vitamin intake, and poor living and social conditions may increase risks of work-related cancers and the biotransformation of toxins and, thus, their toxicity [Pearce and Matos, 1994]. Anemia, for example, causes weakness and fatigue and leads to lowered work output. Anemia is very prevalent among pregnant women in developing countries, with WHO estimating in 1982 that 60% of these women suffered some level of anemia ($<$11 gm/dl), a figure verified in more recent 1991 updates [Koblinsky et al., 1992]. Such patterns of multiple exposures and multiple health outcomes may be exacerbated by the long hours of work and multiple part-time jobs many women have.

It is evident that there are currently limitations in our scientific understanding of these interactions between reproductive and productive spheres and between different spheres of production, in and beyond the household. This lack of information is exacerbated by the fact that recent changes in production processes have been rapid and uneven, have directly or indirectly yielded a wide range of health problems, and have often been unaccompanied by the information, technology, and skills transfer and regulatory capacity to ensure that the risks to health are adequately identified and controlled [Pearce and Matos, 1994].

Women's work is often characterized by a high level of demands, with little control over the nature and content of the work. They are often drawn into unfair conflict and choice over the positive health gains of being employed and the negative health impacts of the way that work is organized. Women have been hired as flexible labor in inflexible work organization, often leading to digestive disorders, sleep difficulties, and musculoskeletal problems [Kothari et al., 1996]. One study in India found the highest incidence of stillbirths, premature births, and deaths during peak rice cultivation season, at a time when women's piece work intensified, the work involving squatting and bending for long periods [Smyre, 1992]. In my own research in Zimbabwe, non-permanent female workers reported higher levels of ill health in both themselves and their children under five during the few months in the year of piece wage work. They were less likely to use health services for these problems and more likely to allow disease to progress at these peak employment times due to the high costs of missing working time when this is paid on a piece-wage basis [Loewenson, 1989].

More importantly, this lack of control over the work process and the roles women are expected to play enhance or impede their ability to prevent and manage work-related risks. Women are given nominal status around their reproductive roles, but are less recognized for their productive roles. This creates contradictory situations where women may be uplifted spiritually, but not materially, may give birth to prophets and leaders, but may not be prophets or leaders, may be valued as ''property'' but may not own property. Women's efforts to protect their health at work have been hindered by this social labeling, as much as by their employment in isolated, insecure jobs, by the lack of effective union approaches to organizing women, by their double work loads, and their vulnerability to harassment.

IMPROVING WOMEN'S HEALTH AT WORK: WHAT ACTIONS?

This article outlines the limitations in the current ascertainment, recognition, and control of women's occupational and work-related ill health. Indeed, in both public and occupational health it could be argued that greater gains in health may be made from the application of current knowledge than from the production of new knowledge on risk health relationships. This shifts the focus of intellectual work somewhat.

While women's health is noted as a combined outcome of their reproductive and productive lives, changes are needed in the current scientific and insurance systems to handle such interacting exposures and outcomes, and to adequately ascertain and report the hazards and health risks of women's work. Occupational health work often relates ill health to specific exposures, and greater information and intervention is needed on the health outcomes of patterns of employment, control over work, and social support systems at work. Inadequate understanding of how these aspects of work produce ill health, at a time of increasing outcontracting, employment insecurity, and double working, undermine the recognition and control of these wider employment-related hazards. Further, building understanding and action around how employment patterns and social roles weaken women's capacity to individually or collectively confront the conditions that undermine their health is critical to effective health interventions.

The health problems emerging in liberalized, competitive production processes, such as EPZs, are not amenable to quick fixes—they demand a deeper process of organizing production towards meeting sustainable development goals, not only in terms of economic growth, but also in the development of human and natural resources. This article argues that women bear, with inadequate recognition from social, scientific, and insurance systems, many of the health costs of current production and market policies. As a ''silent epidemic,'' this may have short-term yields, but may also

create long-term costs for development. These may be manifest in uncontrolled population growth, high infant and child mortality, poor socialization of and social underdevelopment of children, increased poverty, ineffective agriculture, food insecurity, and high levels of sexually transmitted disease. Conversely, investing in women generates returns in health, social, and intergenerational development in a manner that has greater potential to reach the most vulnerable groups.

The 1996 UNDP Human Development Report summarizes the weaknesses in current paths to growth in their description of flawed paths to growth as involving jobless growth, ruthless growth (that mostly benefits the rich), voiceless growth (that is not accompanied by the extension of democracy or empowerment), rootless growth (that withers cultural identity), and futureless growth (that squanders resources needed by future generations). Analysis of the health impacts of women's work identifies the negative health consequences of poor quality jobs (jobless growth), low income work (ruthless growth), poor control over work (voiceless growth), poor social support (rootless growth), and inadequate attention to reproductive hazards (futureless growth). Indeed, the analysis of women's work-related health is strong testimony to the fact that there is an urgent global imperative to make the structure and quality of growth as critical a development issue as its quantity.

REFERENCES

Balmes J. 1990. Silica exposure and tuberculosis: an old problem with some new twists. J Occup Med 32:2:114–115.

Bwititi T, Chikuni O, Loewenson R, Murambiwa W, Nhachi C, Nyazema N. 1987. Health hazards in organophosphate use among farmworkers in the large scale farming sector. Cent Afr Med J 33:5:120–125.

Cliff J. 1991. Destabilisation, adjustment and the impact on women. Paper presented to the ZCTU/UZ Economics Department Workshop on Structural Adjustment and Health, Harare, Zimbabwe.

Commonwealth Secretariat. 1989. Engendering adjustment for the 1990's. London: Commonwealth Secretariat Publications.

Cornia G, Jolly J, Stewart F. 1987. Adjustment with a human face. Oxford: Clarendon Press.

El Sobky M, Rasoul A, Farahat T, El Batanouni M, Abou Salem A. 1994. Prevalence of disability in workers in spinning and weaving industries in Menoufia and Gharbia. Governerships paper presented to the 3rd PACOH Conference, Egpyt.

Fuentes A, Barbra Ehrenreich. 1994. Women in the global factory. Boston.

Goldsmith DF, Beaumont JJ, Morrin LA, Schenker MB. 1995. Respiratory cancer and other chronic disease mortality among silicotics in California. Am J Ind Med 28:459–467.

Hnidzo E. 1997. An overview of dust related cancers in Africa. Afr Newslett Occup Health Saf 7:4–7.

ILO 1988a. Proceedings of the UNCTC/ILO training workshop on export processing zones for government officials in Latin America and the Caribean. ILO Report: Bridgetown, Barbados.

ILO 1988b. Economic and social effects of multinational enterprises in export processing zones. Geneva.

ILO World Employment Programme/JASPA. 1992. African employment report 1990. ILO, Addis Ababa.

Jhamba T. 1994. Mortality determinants in Zimbabwe: policy implications. University of Zimbabwe Mimeo, Harare, Zimbabwe.

Jirira OK. 1990. Southern African Political and Economic Monthly. April: 19–23.

Johal R, Keyvanshad S, Lisker D. 1993. Zimbabwe gender issues information sheet no 1.43. World Bank, July Africa Region.

Kahenya P. 1996. A review of studies on occupational diseases in Kenya. Afr Newslett Occup Health Saf Supplement 2/96:46–49.

Kalumba K. 1991. Impact of structural adjustment programmes on household level food security and child nutrition in Zambia. Paper presented to the ZCTU/UZ Economics Department Workshop on Structural Adjustment and Health, Harare, Zimbabwe.

Kamal A, Shuman A, Kamal M, Ktob M. 1994. Needleprick injuries in Ain Shams University Hospital. Paper presented to the 3rd PACOH Conference, Egpyt.

Kamel R. 1990a. The global factory. American Friends Service Committee. USA.

Kamel R. 1990b. Feminizing union. Labor Research Review. USA.

Kanji N, Kanji N, Manji F. 1991. From development to sustained crisis:structural adjustment, equity and health. Soc Sci Med 33:985–993.

Kitunga L. 1996. Prevalence of occupational diseases in Tanzania. Afr Newslett Occup Health Saf Supplement 2/96:42–45.

Kleinschmidt I, Churchyard G. 1996. Variations in tuberculosis incidence rates in subgroups of South African gold miners. Mimeo, Epidemiology Research Unit, Johannesburg, South Africa.

Klitzman S, Silverstein B, Punnett L, Mock A. 1990. A womens occupational health agenda for the 1990s. New Solutions 1:1:7–17.

Koblinsky M, Campbell O, Harlow S. 1992. Mother and more: a broader perspective on women's health. In: Koblinsky M, Timyan J, Gay J, editors. The health of women: a global perspective. Boulder, CO: Westview Press.

Kothari U, Nababsing V. 1996. Gender and industrialisation. Editions de l'Ocean Indien, Mauritius.

Loewenson R. 1989. The health impact of changing patterns of large-scale agricultural production: the Zimbabwean farmworker. PhD thesis, London University.

Loewenson R. 1993. Structural adjustment and health policy in Africa. International Journal of Health Sciences 23(4):717–730.

Loewenson R, Chisvo M. 1994. Transforming social development: the experience of Zimbabwe. UNICEF, Harare, Zimbabwe.

Loewenson R, Nhachi C, Murambiwa W, Gona P. 1991. Epidemiology of the health impact of pesticide use in developing countries: epidemiological research in Zimbabwe. Mimeo, Harare, Zimbabwe.

Loewenson R, Laurell AC, Hogstedt C. 1994. Participatory approaches to occupational health research, Arbete och Halsa, Sweden No 38.

Maganu E. 1988. The health effects of workers in Botswana: a study on the effects of mining and migration. ILO Working paper, Botswana.

McConnell R. 1988. Epidemiology and occupational health in developing countries: pesticides in Nicaragua. In: Hogstedt C, Reuterwall C, editors. Progress in occupational epidemiology. Amsterdam: Exerpta Medica.

Metwally F, Elmishad A, Kamel E, Ibrahim K. 1994. A study of hepatitis B and C makers among laboratory workers, Paper presented to the 3rd PACOH Conference, Egpyt.

Monyo R. 1996. Chemical management in Tanzania. Afr Newslet Occup Health Saf 6(Suppl 2);80–83.

Murray C, Lopez A, editors. 1997. The global burden of Disease. WHO, World Bank, Harvard School of Public Health, Harvard University Press, USA.

Noweir M. 1986. Occupational health in developing countries with special reference to Egypt. Am J Ind Med 9:125–141.

Onimode B, editor. 1989. The IMF, the World Bank and the African debt. Vols 1 and 2. London: Zed Press.

Packard R. 1989. Industrial production, health and disease in sub-Saharan Africa. Soc Sci Med 28:5:475–496.

Pearce N, Matos E. 1994. Industrialisation and health in occupational cancer in developing countries. Lyon: IARC Sci Publ no. 129.

SATUCC. 1997. Report of the follow up regional trade union workshop on export processing zones, Environment and Sustainable Development, Pretoria, May 3–5.

Sekimpi D, Agaba E, Okot Nwang M, Ogaram D. 1996. Occupational coffee dust allergies in Uganda. Afr Newslett Occup Health Saf 6: 6–9.

Shiva M. 1992. Environmental degradation and subversion of health. Development Dialogie, 1–2. p 71–90.

Smyre P. 1992. Women and health. Women and World Development Series.

UNDP 1996. Human development report. New York: Oxford University Press.

US Department of Labor Bureau of International Standards. 1989–1990. Worker's rights in export processing zones. Washington DC: Govt-Printing Office.

WHO (World Health Organization/OGIEH). 1996. Global burden of disease and injury due to occupational factors, Geneva: WHO.

ZWB (Zimbabwe Womens Bureau). 1994. We carry a heavy load. Part II. Triple-R Printers, Harare, Zimbabwe.