

# **Occupational Safety and Health in Latin America and the Caribbean: Overview, Issues and Policy Recommendations**

**Roberto Fontes Iunes**

Operational Department 3, Inter-American Development Bank

Sustainable Development Department

Social Development Division

Labor Markets Policy Briefs Series



**Inter-American  
Development Bank**

**POLICY BRIEF**  
**OCCUPATIONAL SAFETY AND HEALTH IN LATIN AMERICA AND THE**  
**CARIBBEAN: OVERVIEW, ISSUES, AND POLICY RECOMMENDATIONS<sup>1</sup>**

## **I. INTRODUCTION**

People spend more than one-third of each day at work. For this reason alone it should be clear that working conditions can have a major and direct impact on the health and well being of the approximately 210 million workers of Latin America and the Caribbean (LAC) and their families. Furthermore, concerns with Occupational Safety and Health (OSH) extend well beyond the obvious health consequences of work-generated illnesses, accidents and deaths. OSH issues are directly linked to other areas such as the labor market and labor productivity, household income and poverty, the social security system, international trade, and even the environment. In this sense, OSH conditions are simultaneously cause and effect in the process of social and economic development.

Despite these facts, OSH issues have received little attention in Latin America and the Caribbean due to the widespread, and culturally rooted, lack of awareness regarding the importance of a safe and healthy work environment, and to the weakness of the institutions responsible for the promotion and enforcement of better working conditions. The fact that the available data on occupational accidents, illnesses, and deaths tend to greatly underestimate the magnitude of the problem only contribute to the reinforcement of this situation and lead to inadequate or, at best, poorly implemented health and safety standards.

The failure to implement or enforce appropriate safety-related laws translates into lost production, lost wages, medical expenses, disability, and even death. Occupational fatality rates in Argentina, for example, a country with some of the best social indicators in the region, are comparable to those observed in the United States in the 30's, i.e. prior to the implementation of many of the modern labor laws. The World Health Organization estimates that exposure to pesticides lead to the poisoning of over 1 million and the death of 10,000 agricultural workers every year in LAC. The use of powerful pesticides in banana plantations has caused higher than average cancer rates and birth defects among banana workers and their families in Costa Rica. Even though reliable data on the incidence and costs of occupational illnesses and injuries are difficult to obtain, the annual costs from occupational injuries and deaths in LAC may reach at least US\$ 76 billion, according to the International Labor Organization. The next section will present and discuss in detail the dimension of the occupational safety and health problem in the region.

Work-generated illnesses, injuries and deaths are often seen as an unintended consequence, a negative externality, of the production process. However, since most work-generated health problems can be easily and cheaply prevented, an important part of the regional investment in human resource development is being unnecessarily lost. The third section analyzes the

---

<sup>1</sup> Much of the information presented on this paper is based on Giuffrida, Iunes and Savedoff (2001A and (2001B).

specific characteristics of Latin American and Caribbean economies and institutions that determine the high exposure to occupational hazards faced by the workers of the region.

Addressing occupational safety and health problems is an extremely complex task. It requires dealing with overlapping responsibilities between Ministries of Labor and Health, and between private insurers and social security institutes. It requires involvement with business associations and workers unions, international trade negotiators, and environmentalists. And it requires making decisions with significant distributional and health consequences. Fortunately, as discussed in the final section of this paper, there are several non-mutually exclusive policy mechanisms and instruments that can be implemented to deal with occupational health issues.

## **II. ESTIMATING OCCUPATIONAL DISEASES AND ACCIDENTS IN LATIN AMERICA AND THE CARIBBEAN**

### **A. The sources of risk**

Workers can be exposed to a large number of hazards including physical, chemical, biological and psychosocial hazards that can represent a risk to their health.<sup>2</sup> Heavy physical workloads or ergonomically poor working conditions can lead to injuries and musculoskeletal disorders. It is estimated that between 50% and 70% of the workforce in developing countries is exposed to these types of hazards, particularly miners, farmers, lumberjacks, fishermen, and construction workers. Other physical hazards such as noise, vibration, ionizing and non-ionizing radiation, heat and other unhealthy microclimatic conditions can also have adverse health effects, including cancer. The vast majority (up to 80%) of workers in developing countries are exposed to a variety of these hazards.<sup>3</sup>

In addition to physical hazards, workers are exposed to a large number of chemical hazards such as solvents, pesticides and metal dusts. Exposure to toxic chemicals can potentially cause cancer, respiratory and skin diseases, and have adverse effects on reproductive functions. Mineral and vegetable dusts, such as silica, asbestos, and coal dust, cause irreversible lung diseases. In fact, the risk of cancer from workplace exposure is of particular concern: around 350 chemical substances have been identified as occupational carcinogens. The most common occupational cancers include leukemia, sarcomas, and lung, bladder, skin and bone cancer. Strikingly, silicosis, the most widespread cause of occupational lung diseases and cancer in LAC, is a disease that has been known since ancient Greece, and can be easily prevented with appropriate ventilation and other measures that reduce exposure to the silica dust.<sup>4</sup>

---

<sup>2</sup> The term hazard typically refers to the source of risk. The likelihood of harming health from exposure distinguishes risk from hazard: a health risk is created by a hazard. Accordingly, an occupational health risk can be described as the possibility of suffering health impairments from exposure to a hazard that originates in the work environment.

<sup>3</sup> In developed countries this exposure is estimated to be between 10% and 30% of the workforce.

<sup>4</sup> The risk of contracting silicosis is especially high among iron and steel foundry workers, miners, and in the pottery and glass industries.

Biological hazards are also commonly found in the workplace. Exposure to biological agents (viruses, bacteria, parasites, fungi and molds) occurs in many work environments from agriculture to offices and health services. The Hepatitis B and C viruses, HIV/AIDS and tuberculosis infection among healthcare workers, and chronic parasitic diseases among agricultural and forestry workers, are examples of these types of occupational diseases.

It must be noted that the high level of risk that may be inherent to a particular activity is not the only determinant of dangerous work conditions: poorly designed workspaces or the absence of security devices, protective equipment, procedures and training can expose workers to additional and unnecessary risks. Finally, the social conditions at work, such as inequality and unfairness; lack of communication and poor organization of work; and strained interpersonal relationships between managers and employees can also have a damaging impact on workers' health. Frequently, these conditions manifest themselves in stress and its consequences, such as elevated risks of cardiovascular diseases, particularly hypertension, and mental disorders.

#### B. The dimension of occupational diseases and accidents in LAC

Any analysis of the incidence and impact of workplace diseases and accidents in LAC must take into consideration the limits imposed by an widespread underreporting of accidents and illnesses and by the frequent exclusion of entire sectors from information systems. The problem of underreporting is prevalent even in firms and sectors that are legally obligated to do so, and is particularly serious in the case of occupational diseases where a direct link between a given disease and the work environment is difficult to establish.<sup>5 6</sup> Furthermore, OSH issues are set in the more general context of labor dispute in which the employers' desire to reduce their liability for work-related diseases and injuries lead to an unwillingness to recognize occupational health problems and to the resistance of reporting them when known. In some countries the insurance premium is based on the safety record of each company, thus firms with fewer accidents would have lower premiums. While this mechanism is designed to encourage employers to improve safety standards, the lack of appropriate regulatory and monitoring mechanisms can encourage underreporting, since firms have a financial incentive to hide the occurrence of accidents and diseases.

International comparisons are also difficult because registration and notification systems are not homogeneous across countries. In some countries the data cover occupational diseases and accidents associated with commuting, whereas in others they do not. In addition, while for most countries the figures refer only to the number of compensated accidents, data for

---

<sup>5</sup> *Occupational diseases* are the result of the repetition of a work-related activity or the prolonged exposure to hazards at work. These health effects tend to develop slowly, are difficult to be clearly linked to work conditions (many have multiple potential sources, including life-style), and are frequently only observed after long periods of time. All these factors make it difficult to establish a direct causal relationship between work, the work environment and the disease and are a major reason for the extremely large underreporting of occupational diseases observed worldwide. In LAC the recognition of occupational diseases is further complicated by the lack of training of health care providers in occupational medicine. A *work-related accident*, on the other hand, refers to an event that directly affects a worker's health during the performance of work activities. The physical injuries that result from such an event have a clear causal relationship with the work activity and therefore are easier to establish.

<sup>6</sup> The World Health Organization estimates that only between 1% and 4% of all occupational diseases are reported in the developing world.

few countries include all reported accidents. In general, it is likely that inconsistencies are greater in the comparison of nonfatal than fatal accidents.

### 1. Fatal accidents

Table 1, below displays the available reported occupational fatality rates in Latin America and the Caribbean and some non-regional countries such as Canada, the United States, Finland and South Korea.<sup>7</sup>

**Table 1**  
Occupational Fatality Rates, LAC and Selected Countries  
(last available year)

Country	Fatality rate (per 000 workers)	% of workforce covered	Year
Barbados (b)	0.000	-	95
Bolivia (a)	0.111	23	97
Brazil (1, 2, a)	0.150	33	96
Colombia (2, b)	0.077	85	96
Costa Rica (1, 2, a)	0.069	55	97
Ecuador (1, a)	0.168	35	94
El Salvador (1, a)	0.330	26	98
Mexico (1, 2, b)	0.120	34	97
Nicaragua (1, 2, a)	0.096	-	98
Panama (1, a)	0.140	65	98
Peru (a)	0.186	7	98
Trinidad & Tobago (b)	0.010	-	97
Venezuela (1, b)	0.006	60	97
Average LAC (c)	0.135	-	-
Canada (2, a)	0.071	84	97
USA (2, b)	0.005	-	97
Finland (a)	0.027	82	96
Republic of Korea (1, 2, a)	0.290	38	98

Source: International Labor Organization (1998).

(1): commuting accidents are included.

(2): occupational diseases are included.

(a): compensated injuries

(b): reported injuries

(c): average weighted by the number of workers covered in each country.

As it can be seen, the (weighted) average fatality rate in LAC is 0.135 per 1,000 workers, which is significantly greater than the rates observed in the industrialized countries shown in the table — almost 30 times the reported US fatality rate, 5 times the rates for Finland and twice the Canadian fatality rate. South Korea, on the other hand, had a fatality rate in 1998 that was twice the average for LAC. This could be due to better registration, heavier reliance on risky sectors (such as heavy manufacturing), or by the very rapid process of industrialization experienced under a regime that, until recently, was quite repressive of unions and workers' rights. The large variation observed within the region must also be

<sup>7</sup> From Giuffrida, Iunes and Savedoff (2001A).

noted, reaching 0.33 fatal accidents per 1,000 workers in El Salvador. The absence of fatal accidents in Barbados can be explained, at least partially, by the fact that its economy is largely based on activities, such as tourism, which present lower occupational risks. On the other hand, the low accident rates in countries like Trinidad and Tobago, and Venezuela may simply reflect the deficiencies of the reporting systems since primary extraction plays a large role in both economies. The table also clearly shows the low proportion of the workforce covered by OSH information system in LAC, in Brazil and Mexico for example, the two largest countries of the region, the reporting system reaches only one third of the labor force.

If the regional average rate of fatal occupational accidents is applied to the entire workforce of LAC (around 202 million in 1998), an estimate of about 27,270 annual fatal occupational accidents in the region can be derived. This figure is almost four times the 7,443 fatal injuries reported in the official 1998 International Labor Office (ILO) statistics for the region in 1998. If the workers of Latin America and the Caribbean were exposed to the same risk of dying from occupational factors as the workers of industrialized countries (fatality rate of 0.053 per 1,000 workers), more than 16,500 lives could have been saved each year.

The above estimate is not only conservative but also very sensitive to the assumptions used to derive it.<sup>8</sup> If an alternative scenario in which only half of occupational fatalities are actually reported, and the rate of occupational fatalities in the informal sector is 50% higher than in the formal sector, the estimate of total annual occupational fatalities increases to about 68,000.

Finally, the data available indicate that India, the former socialist economies of Europe, and China have lower estimated fatality rates than LAC. The region's safety record is only better than relatively poorer countries, such as those of Sub-Saharan Africa, and/or those in which labor is poorly organized such as the Middle East and other Asian countries and islands.

## *2. Nonfatal accidents*

The roughly constant ratio observed between fatal and nonfatal accidents (see Takala, 1999) can be used to derive a probable figure for nonfatal accidents in the region. Using the ratio of 1 fatal accident per 750 nonfatal accidents as a conservative estimate, and the ratio of 1 per 1,000 nonfatal accidents observed in countries with more sophisticated reporting systems such as Finland and the United States (Leigh, 1996; International Labor Organization, 1998), it is possible to estimate that there are between 20 and 27 million occupational accidents causing 3 or more days of absence from work in LAC in any given year. A less conservative estimate, using the alternative scenario described in the previous paragraph leads to an estimate that is within the range of 51 to 68 million non-fatal accidents each year.

---

<sup>8</sup> Presumably this is a conservative estimate of the actual number of fatal occupation accidents as it is based on the following assumptions: a) in the workforce covered by reporting systems all fatal occupational accidents were reported; b) the fatality rate in the formal sector of the economy was the same as in the informal sector; and c) 50% of the workforce was employed in the formal sector of the economy.

### 3. *Economic costs*

According to the estimate presented by Leigh and colleagues (1996), in the United States the economic costs of occupational injuries and illnesses represent approximately 3% of the US GDP (1992 data). The ILO and the World Health Organization (WHO) have produced some approximation of the total burden of occupational accidents and argue that the cost of occupational accidents may represent as much as 10% of the GDP of developing countries.

In relation to Latin America and the Caribbean, the only information available is derived from the national social security systems, which include health care expenditure and pensions for work-related disabilities and deaths. According to a recent report produced by the Pan American Health Organization (PAHO), the situation is quite different between the countries of the region. In Costa Rica, where the National Insurance Institute covers 68% of the country's workforce, direct expenditure (care and indemnification for occupational injuries and diseases) and administrative costs amounted to US\$ 48 million in 1995, representing nearly US\$ 70 per insured worker. In other countries, however, the expenditure was significantly lower. In Chile for instance, the expenditure was US\$ 34 per insured person, and Mexico showed the lowest expenditure with just US\$ 21 per insured worker. The average social security expenditure per insured person in the region amounted to approximately US\$ 31 per year.

Almost nothing is known about the costs borne by other social actors such as the private sector, the families and the communities. Heinrich et al. (1980) estimates that the costs to the firms are, on average, four times greater than the direct costs related to workers compensation. These hidden costs include: a) loss of production due to recovery time; b) lower productivity upon returning to work; and c) lost production caused by the reduction of other workers' productivity, either because their work depends on and complements the injured worker, or because the injury reduces morale and increases stress. In addition, there may be damage to equipment, machinery, materials, or facilities and official figures do not include any compensation that may be paid by the firm beyond the social security. Even when social security benefits are granted they cannot fully cover the economic costs (e.g. loss of income, extra expenditure on medicine) and non-monetary costs (e.g. contribution to home activities, pain and suffering) incurred. Moreover, the costs sustained by workers in the informal sector are typically not covered by social security systems and therefore are primarily borne by the workers themselves and their families.

It must also be noted that the economic consequences of occupational injuries spills over to other sectors of the economy. For instance, occupational accidents may produce increases in the demand for public health services and other welfare agencies, which can be financed by general revenues and, therefore, are sustained by all taxpayers.<sup>9</sup> A recent study found that agrochemical poisoning in Yucatan, Mexico, costs approximately US\$ 3 million per year to the economy of that region (equivalent to 2% of the value of agricultural production), and that 30% of this cost is borne by the state medical system (Drucker et al., 1999).

If the average social security expenditure of almost US\$ 31 per insured worker is used to project a conservative estimate of the economic costs of occupational accidents and injuries,

---

<sup>9</sup> Even though data are not available, it can be said with relative confidence that the nature of occupational diseases (as discussed earlier) implies that almost all such cases tend to be borne by the general health system.

the figure of US\$ 24 billion is obtained, which represents almost 2% of the annual GDP of the region. If adjustments are made to include the costs to formal sector workers beyond social security benefits; the ratio of productivity to social security costs; and the ratio of externalities; the economic costs of occupational accidents and injuries in LAC reach US\$ 55 billion, or approximately 4% of the annual GDP of the region.

### C. Section Summary

Even though reliable and comparable data on occupational accidents, injuries and deaths are difficult to obtain, the estimates derived for the region indicate that the social and economic impact of the unsafe work environment to which the labor force of LAC is exposed is significant: conservative figures show that it costs the region at least 27,000 deaths, 20,000,000 injuries and 4% of its GDP. Furthermore, work-safety conditions observed in the region are substantially higher than those found in industrialized economies and even above those of other developing regions. It is, therefore, obvious that a substantial proportion of the regional effort to promote and develop its human resources is unnecessarily being lost in a workplace that is generally unsafe and unhealthy.

## **III. POLICY ISSUES FOR LATIN AMERICA AND THE CARIBBEAN**

As the data presented above show, the workers of Latin America and the Caribbean are subject to a work environment that leads to high incidence of injuries and deaths, even if compared to other regions of the world. This section discusses the key challenges and issues that contribute to the high risks faced by workers of the region. These challenges define the main occupational safety and health policy issues for the region and constitute the basis for the policy recommendations presented in the next section.

### A. Labor Market

The presence of significant levels of unemployment and underemployment, and the absence of income protection or insurance mechanisms for the unemployed and for those working in unregulated sectors of the economy, cause many Latin American workers to feel compelled to accept unusually hazardous working conditions. Furthermore, because some of these workers lack the education or the skills to seek better alternatives, or because they cannot expose their families to the uncertainties of the labor market described above, they are in fact “trapped” in sectors or jobs that are dangerous, unhealthy and poorly paid. Moreover, their likely feeble conditions ? the result of the constant exposure to a harmful and hazardous environment ? will further limit the number of options available to them. Thus even if they wanted to, the move to a better occupation is too often an unlikely feat. Ultimately, a premature death or disability may push their dependents into the same vicious cycle.

The Latin American history of authoritarianism and undemocratic political regimes has shaped the development of the labor movement and of organized labor in the region, and directly affected the health and safety conditions of the work environment. Even though each individual worker has an incentive to demand better working conditions, the risk of being individually sanctioned or dismissed by the employer effectively limits his or her

capacity to push for change, which implies that an organized labor force would be better positioned to press for such demands. While these collective actions can go against the interests of employers, in many cases unions can be effective channels of communication and information that can promote increases in productivity that serve both workers' and employers' interests. However, such a constructive role requires unions that are accountable to their memberships through effective and democratic processes. Unfortunately unions in Latin America have not always been independent organizations that speak for the interests of their rank and file. Some have faced severe repression under dictatorships and military regimes, while others have been co-opted to serve political interests that do not necessarily reflect those of their members, or have been susceptible to corruption. Furthermore, in many cases only a small proportion of the (formal) workforce is organized under labor unions. For these and other reasons, including the high levels of unemployment and underemployment discussed above, unions have not been able to have the same positive impact on improving working conditions in the region, as their counterparts in higher income countries.

## B. Informal Sector

A substantial proportion of the region's workforce is engaged in the informal sector of the economy, i.e. micro-enterprises, domestic services, and self-employed workers. In 1998 around 48% of the economically active population of the region was employed in the informal sector. The fact that informal economic activities are prevalent in sectors that are particularly hazardous such as construction, agriculture and small-scale mining is compounded by the absence of insurance mechanisms, legal standards, regulation and monitoring of work conditions, which by definition characterize the informal workplace. Furthermore, workers in the informal sector are less likely to organize and tend to be the least educated and informed, thus increasing their vulnerability to occupational hazards and risks. Finally, particularly vulnerable populations, such as children and the elderly, are disproportionately employed in informal activities.

## C. High-Risk Industries

This sub-section discusses issues that are specifically related to important industries in the region that are characterized by particularly dangerous activities.

### 1. *Mining*

Because Latin America and the Caribbean is endowed with a number of mineral commodities such as tin, copper, silver, gold, oil and gas, the primary extractive industry is an important economic activity in many countries of the region. It is estimated that currently there are between 543,000 and 1,039,000 miners in the region. Even though this is an industry that involves high-risk activities and as such a high incidence of occupational illness and injuries are expected, the rates observed in LAC are still exceptionally and unnecessarily high.<sup>10</sup> A study of occupational injuries among coal miners in the province of Antioquia,

---

<sup>10</sup> A mine is an extremely dangerous environment: accidents may occur from collapsing roofs, falls, electrocution, use of dangerous equipment, and explosives. The inadequate engineering controls and the lack of protective equipment and medical surveillance compound the occupational risks of mining in the region.

Colombia, estimated a rate of 522 accidents per 1,000 full-time workers per year, while the rate for similar mining activity in the United States was only 152 accidents per 1,000 workers (Frumkin, 1999). Silicosis, is a major occupational health problem among miners. Even though it is a preventable disease that has been known since Ancient Greece, it still affects between 15% and 22% of miners in countries like Bolivia, Chile and Colombia.<sup>11, 12</sup>

The negative externalities from the extractive industry can also be large: rivers and streams are often polluted by runoffs from mines, and forests and mountains can be destroyed. The large quantity of mercury released into the environment during gold extraction, particularly prevalent in the Amazon region, constitutes an increasing concern for its potential danger both to the miners and to the population living in the immediate area. While workers are exposed to health risks from inhaling elemental mercury, the mercury released in substantial amounts into rivers and lakes may accumulate in aquatic food chains and affect the general population.<sup>13</sup>

## 2. Agriculture

Approximately 19 percent of the region's workforce is engaged in agriculture and other primary sector activities. In some countries (e.g. Honduras and El Salvador), this share can reach one third of the total workforce. While some of the occupational injuries and accidents that occur in the agricultural sector, such as those related to heavy physical work, have the same general characteristics as those that take place in the industrial sector, other types of occupational accidents and diseases, such as pesticide poisoning, are specific to the agriculture industry.

The use of pesticides has greatly increased in LAC during the last decade: the 40% increase of pesticide consumption observed in the region between 1988 and 1993 was two times greater than the pattern observed worldwide. Acute pesticide poisoning is recognized as a major public health problem in much of the region (Repetto and Baliga, 1996).<sup>14</sup> Cases of pesticide poisoning among agricultural workers are frequent, but rates vary widely. A recent survey in the state of Yucatan (Mexico) found that occupational exposure to pesticides explained 40% of the annual demand for health care. In Nicaragua 25% of agricultural workers report pesticide poisoning every year and 48% present lifetime poisoning (Keifer et al., 1996). In addition to acute poisoning, pesticide exposure can also lead to permanent damages to the peripheral nervous system. Furthermore, excessive or improper use of pesticides can also have a negative impact on the health of the general population through the consumption of agricultural products that are excessively saturated with such chemicals.

Studies in LAC also indicate that most workers who spray and apply pesticides do not use adequate protective clothing. It has been suggested that protective clothing made of plastic

---

<sup>11</sup> Silicosis can be prevented through improved ventilation and other measures that reduce the worker's exposure to the silica dust.

<sup>12</sup> Silicosis is not the only health threat faced by miners. They are also exposed to coal dust that can cause black lung disease, and to high concentrations of metals that can cause neurological damage.

<sup>13</sup> The best documented case is Brazil, where five million people are estimated to be exposed to health hazards derived from the occupational use of mercury. This figure includes people living along rivers who eat contaminated fish, as well as those exposed to metallic mercury released in the mining areas and in the urban shops (Camara and Corey, 1992).

<sup>14</sup> 99% of all deaths due to pesticide poisoning occur in developing countries (Kogevinas et al., 1994).

or rubber material is designed for colder climates and may cause excessive discomfort in hot, humid climates. It is, however, the perverse combination of high illiteracy rates and nonexistent safety training among agricultural workers that most likely explains why safety instructions are not properly followed in the region.

Finally, the agricultural sector combines several characteristics that make the implementation of an effective regulatory system extremely difficult, such as: i. geographical dispersion; ii. a very large number of employers with little technical capacity; iii. a workforce with larger than average proportions of uneducated, illiterate and unskilled workers; iv. the characteristics described in (iii) are simultaneously cause and consequence of the disorganization and poor representation of the rural labor movement; and v. a historical tradition of rigid hierarchical and authoritarian structures.

### 3. *Construction*

The construction industry of the region accounts for a large number of occupational accidents. For example, data from the last quarter of 1988 in Sao Paulo, Brazil, show that the construction industry responded for the largest share of all work-related accidents reported (Santos et al., 1990), and in Chile the construction industry has the country's highest occupational risk, according to data from the Asociación Chilena de Seguridad (1999). The most common types of accidents observed in the industry are caused by:

- a) falls from ladders, lifts and scaffolds. Falls consistently account for the greatest number of fatalities in the construction industry. These types of accidents often involve a number of factors including unstable working surfaces, the misuse of fall protection equipment, workers slipping or being struck by a falling object. Studies have shown that the use of guardrails, fall arrest systems, safety nets and covers can prevent many such deaths and injuries;
- b) the use of defective or negligently operated cranes, hoists and derricks. Many of these accidents are preventable and are usually caused by poor safety procedures and negligence;
- c) the use of dangerous equipment, tools and machines. Moving machine parts have the potential for causing severe work-place injuries, such as crushed fingers or hands, amputations, and burns and blindness, among others. These injuries can be prevented with the use of equipment with appropriate design and protective features, along with training in safe operation; and
- d) the use of explosive, corrosive and poisonous gas. Many construction projects require the use of compressed gases, which may be combustible, explosive, corrosive, poisonous, or pose some combination of hazards. The safe design, installation, operation and maintenance in accordance with the appropriate codes and standards are essential to worker safety and health.

While these risks are common to construction in all countries, they are exacerbated by the region's climate (heat and humidity) and particularly by the lack of adequate protection and training.

#### D. Small and Medium Enterprises

Approximately one quarter of the LAC labor force working in the formal sector is employed by small enterprises of 6 to 20 workers. The existence of fixed costs and economies of scale in reducing occupational hazards implies that “generally, the smaller the industry is, the higher the rate of workplace injury and illness” (Loewenson, 1994).<sup>15</sup> The high labor turnover experienced by these firms is also a disincentive to invest in the safety training of workers. Finally, often the owners and managers of small and medium enterprises lack the technical knowledge and training to develop and implement adequate safety measures.

#### E. OSH, International Trade and Labor Standards

Social activists argue that free trade and “globalization” generate a process of “destructive competition” that will create a race to the bottom in labor standards. Frumkin (1999), describes the argument very well:

“Local and national governments (...) would hesitate to enforce regulations for fear of driving plants from their jurisdictions to lower-wage areas and losing needed jobs. Workers, perceiving the same dilemma, would refrain from pressing for safer workplaces. And firms in developed nations, increasingly facing international competitors and seeking the lowest possible costs, would play one location against another. Standards of practice would descend in developed nations toward those of developing nations, exactly as predicted by the factor price equalization theorem that is central to the economics of free trade. This ‘race to the bottom’ would threaten the health and safety of workers in both developed and developing nations.”<sup>16</sup> (p. 644)

After the street protests that occurred in 1999 during the Seattle World Trade Organization (WTO) meetings, issues like the use of child labor and “sweatshops” went to the forefront of the public debate. As a result of the strong political pressure that followed, industrialized countries, particularly the United States, have intensified their pressures to incorporate issues related to labor standards as part of trade negotiations, a position that has been vehemently opposed by most developing countries, including those from Latin America and the Caribbean. This opposition is based on the following arguments:

- a) first, the problems with workers’ rights in the region is one of enforcement and compliance not one of “promotion” or support through official policies. In fact, the countries of the region argue that they have signed most of the ILO conventions that protect core labor rights;

---

<sup>15</sup> In Japan, the fatality rate observed in small and medium enterprises is almost 20 times greater than in large companies. These companies are responsible for approximately 80% of occupational injuries and deaths (Nomiya, 1999).

<sup>16</sup> Some Canadian health and safety activists are concerned that the North American Free Trade Agreement (NAFTA) will bring the rights of Canadian workers “downward” to those in the U.S., where, for example, management-worker health and safety committees are not mandatory and the right to refuse hazardous work is not guaranteed by statute.

<sup>17</sup> Not all LAC countries, however, express a strong opposition to the link between labor standards and trade, e.g. Chile.

- b) second, the perception of LAC countries is that the pressure to include labor standards as part of trade negotiations is the result of the convergence of two distinct objectives: a basic rights agenda promoted by some non-governmental organizations (NGOs), human rights groups and social activists; and a protectionist agenda (disguised by a morality-driven discourse) supported by unions and special interest groups from developed countries;
- c) third, the trade priority of the countries of the region is to ensure market access for their goods and services as means to promote growth, employment and social development. The inclusion of labor standards issues in the negotiation process would only delay (and even threaten) the achievement of these fundamental objectives; and
- d) finally, the objective to improve labor conditions would be more efficiently achieved through cooperation, technical assistance and capacity building rather than trade sanctions (Salazar-Xirinachs, 2000).<sup>18</sup>

In summary, LAC countries do not dispute the merit of the concern with labor standards, in fact they sustain that labor standards protection is a basic right of workers and a moral obligation of the countries. As such, they should not be used to improve trade performance nor to promote protectionist measures. In order to minimize the risk of a “race to the bottom” and still promote the trade agenda, developing countries propose to move labor standards issues and disputes away from the sphere of the WTO and into the jurisdiction of the ILO, the agency with the mandate to deal with labor-related issues.<sup>19</sup>

The evidence available, although still limited, seems to support the argument that there is a mutually supportive relationship, rather than a detrimental one, between successfully sustained trade reforms and improvements in labor rights (Elliott and Freeman, 2001). In a very careful analysis, Rodrik (1996) finds a weak relationship between labor standards and comparative advantage in labor-intensive goods. His results indicate that the association between low labor standards in developing countries and the wage of unskilled workers in developed countries is not particularly compelling.

#### F. Regulation, Incentives and Compliance

In a world of perfect markets and complete information, riskier jobs would pay wages high enough to compensate for the additional risk incurred. In such setting, public interventions such as OSH regulation and mandatory insurance for occupational accidents would be unnecessary.<sup>20</sup> However, because labor market inefficiencies and incomplete information exist, employers may not have adequate incentives to reduce risks in the workplace.

---

<sup>18</sup> Even though shared by most developing countries, these arguments should not be viewed as reflecting a unified position. Not all LAC countries, for instance, express a strong opposition to the link between labor standards and trade, e.g. Chile.

<sup>19</sup> The obvious limitation to this proposal is that ILO-led agreements currently do not have the means to be enforced, contrary to a WTO setting in which trade sanctions could be applied.

<sup>20</sup> Under a perfectly competitive labor market, with risk averse workers, perfect information about risks of accidents and perfect worker mobility, in which firms had different risks of accidents but could influence the probability of accidents by undertaking safety expenditures, workers' compensation insurance would be unnecessary and government regulation would actually be harmful (see Thaler and Rosen, 1976).

Furthermore, the presence of involuntary unemployment undermines the assumption that workers receive a “fair” compensation for higher risks. In fact, it has been demonstrated that if the labor market presents imperfections, mandatory insurance and safety regulation raises the expected utility of risk-averse workers (Diamond 1977; Oi, 1974). Thus, an imperfect labor market justifies the intervention of the state or some collective agency to evaluate safety and to introduce regulations, norms, standards, incentives, and the sanctions necessary to enforce them.

An argument similar to the “race to the bottom” is also used to justify the implementation of OSH regulations: competitive pressures make it difficult for individual firms to improve occupational safety standards if they present, or are perceived to generate, cost increases. In this sense, collective enforcement of certain occupational safety standards, by the government may be the only mechanism to ensure that desirable standards are achieved and to avoid “defections” from the common agreement. Regulation can also reduce information costs to firms or workers by improving the amount, kinds and quality of information available. Ashford (1976), for instance, justifies OSH regulations based on the argument that these standards represent a “public good.” Finally, tighter and improved OSH regulatory systems have been shown to have the potential to increase productivity and profitability.<sup>21</sup>

The critics of the regulatory approach argue that its interventionist and punitive characteristics do not correct the structural causes that induce workplace hazards and may even add new distortions to them. Furthermore, regulatory agencies are also called “toothless tigers,” unable to achieve their stated goals because of the small number of inspectors, few inspections, and the low level of fines imposed upon non-compliant firms. The critique proposes the use of economic signals as the appropriate means to provide the “correct” safety and health incentives to those key agents that can actually transform the work environment: the firms and the workers. Some developed and developing countries have indeed progressed in this direction and introduced more flexible designs into their OSH systems, moving away from arrangements in which contributions to the workers’ compensation system are based on sector or industry-wide average risks, and into a more flexible firm-based insurance scheme in which premiums are based on an individual firm’s safety record.<sup>22</sup> In this context, firms and insurers have the common incentive of reducing the rate of accidents and injuries to lower premium and claim payments, respectively.<sup>23</sup> It must be noted, however, that if not properly structured, this mechanism can provide the perverse incentive for firms to underreport and for insurers not to seek and/or pay expensive claims.

## G. Institutional Organization

In Latin America and the Caribbean the institutional setting of in which occupational safety and health issues are defined is often comprised by three major players. The *Ministry of Labor*

---

<sup>21</sup> For example Maskus et al., 1995 in the case of Mexico and Dufor et al., 1998 for Quebec.

<sup>22</sup> Germany, Spain, France, Belgium, Greece, Israel and Italy and Mexico, Argentina and Chile (Medici, 1999).

<sup>23</sup> This firm-based scheme can reduce the problem of moral hazard. The presence of insurance still decreases the cost of an accident to the worker, which might cause him/her to be less careful, but it increases the cost of an accident to the firm. The net result depends on the substitutability or complementarities that might exist between the precautions taken by workers and firms, and the relation between the marginal cost of added safety and the marginal increase in premium associated with having a bad occupational safety record.

is the institution with the mandate to define policies, regulations and standards, and (frequently) with the responsibility to carry out inspections and apply sanctions. The *Social Security Institute* (or Ministry) is often responsible for collecting the employers' and employees' contributions, and to pay the appropriate benefits and pensions. Sometimes it also provides medical attention to its affiliates, but quite often, injured and (particularly) sick workers will seek the services financed and/or provided by the *Ministry of Health*.

This institutional organization tends to disperse the interests related to OSH, leading, therefore, to an arrangement that lacks ownership and commitment. Because they do not pay for the costs generated by inadequately designed and/or poorly implemented policies, and because they do not see the savings produced by good inspection systems, Ministries of Labor have little incentive to allocate important levels of resources and/or effort to deal with OSH. The Social Security Institutes, on the other hand, can be very content with the low levels of claims and do not have the incentive to seek improvements in existing reporting systems, since any surplus in the OSH account can be used to pay the commonly observed deficits of the retirement account or of the medical care system. The Ministries of Health may end up subsidizing a substantial portion of the countries' OSH bill, but because physicians and other professionals are not adequately trained to identify most work-related injuries and diseases, such cases are commonly lost in the general practice and are never accounted for or reimbursed.

#### H. Gender<sup>24</sup>

The presence of women in the LAC workforce has been increasing steadily in recent decades. The data available indicate that by the mid-1990's women represented approximately 38% of the region's workforce.

Despite these advances, the labor market for women in Latin America still presents some formidable challenges:

- a) it is one of the most segmented-by-gender labor markets in the world;
- b) women are over-represented in the service sector, their presence in the agricultural sector is understood to be highly underestimated, and their participation in the industrial sector has increased substantially in many countries with the expansion of "maquila" operations in the region. The high levels of workplace hazards present in these sectors represent a concern for the health of working women in the region;
- c) women still have a relatively small representation in and by unions; and
- d) women's unemployment rates are higher than those of men for all income levels but particularly so for the poor where they reach almost 20%.

The information available from the region suggests that women seem to face less physical risks at work but more psychosocial and mental health risks. Data from Mexico suggest that recent occupational safety improvements have been concentrated in predominantly male occupations. Furthermore, the repetitive nature of the many tasks assigned to women in

---

<sup>24</sup> The discussion of this section is largely based on Buvinic et al., 2001.

factories and offices have been leading to an increase in the number of muscular-skeletal disorders.

When pregnant, women face the additional predicament that health hazards can also affect the well-being of the baby. Scientific evidence shows that indeed exposure to occupational hazards, such as pesticides and other chemicals, can affect the fetus and lead to higher mortality rates or congenital malformation. Ergonomic problems have also been associated with miscarriages, low birth weight and prematurity. Even though most countries of the region have comprehensive maternity protection laws, such measures only reach the small proportion of women workers affiliated to the social security system.

#### I. Other Issues

- The workforce in LAC comprises a large number of people who are less healthy and therefore more vulnerable to occupational exposure to toxic chemicals or biological agents.
- Workers in developing countries tend to work more hours per week and have longer exposure to hazards than in industrialized economies. Because occupational risk is determined both by the level and the duration of exposure to hazards, even when work is done in environments that are considered safe by standards established in industrialized countries, the longer workweek may provoke a degree of exposure that exceeds adequate safety levels.
- The machinery used in production is often old and dangerous and newer and safer alternatives can be too expensive for most small and medium enterprises. Furthermore, the machinery and equipment used for production, as well as the health and safety equipment and tools are often designed for developed countries' standards and climatic working conditions, often rendering them ergonomically and physically inadequate.
- Some of the geographical and climatic characteristics of the region such as high altitude and heat and humidity may exacerbate the risk of certain injuries or contracting particular illnesses in the workplace.
- Because OSH is a new field in the region, there are fewer safety professionals and experts on occupational medicine and industrial hygiene available, less safety and monitoring equipment, fewer inspectors and less enforcement than in developed nations. Furthermore, physicians and nurses in the region generally lack the adequate training to identify occupational diseases.

#### J. Section Summary

The table below summarizes and classifies the key occupational safety and health issues and challenges faced by the region.

Table 2  
Main Policy Issues and Challenges

<p><b>Related to the labor market</b></p> <ul style="list-style-type: none"> <li>High unemployment and underemployment</li> <li>“Weak” and unrepresentative unions</li> <li>Gender segmentation</li> </ul> <p><b>Related to the social organization of work</b></p> <ul style="list-style-type: none"> <li>Predominance of small and medium enterprises</li> <li>Large informal sector</li> </ul> <p><b>Related to the workforce</b></p> <ul style="list-style-type: none"> <li>Low literacy rates</li> <li>Low skills</li> <li>“Feminization” of the workforce</li> <li>Poor health conditions</li> </ul>	<p><b>Related to working conditions</b></p> <ul style="list-style-type: none"> <li>Long working hours</li> <li>Inadequate machinery and equipment</li> <li>Inadequate safety equipment</li> <li>Climate and geography</li> </ul> <p><b>Other issues and challenges</b></p> <ul style="list-style-type: none"> <li>Economic importance of high-risk industries</li> <li>Trade and labor standards</li> <li>Inadequate regulation and incentive mechanisms</li> <li>Lack of expertise in occupational medicine and industrial hygiene</li> <li>Institutional organization</li> </ul>
--	--

Note: Table based on Frumkin (1999).

#### IV. POLICY CONCLUSIONS AND RECOMMENDATIONS

The discussion of the previous section clearly demonstrates the fundamental argument of this paper, that occupational safety and health is a development issue. The key determinants of workplace health and safety conditions in the region – for example the high levels of unemployment and underemployment, the relatively unskilled workforce and its low levels of literacy and poor health conditions, and the large informal sector – require policy interventions that go well beyond the boundaries of OSH to enter the realm of labor sector reform and social and macroeconomic progress. This reality should not lead, however, to inaction. In fact, the excessive rates of fatalities and non-fatal injuries shown in Section II indicate that the region has many opportunities to improve occupational health and safety in ways that are cost-effective. Simple measures such as adequate ventilation, proper use of safety equipment, and unobstructed work areas can go a long way toward reducing occupational risks in the region.

Accordingly, a trade-off between improved safety and health conditions and costs (financial, through lower productivity or job reduction) may not necessarily exist. Reducing occupational hazards *can* improve labor productivity.<sup>25</sup> Furthermore, labor-related injuries, deaths and diseases carry with them hidden costs to the firm that, if considered as part of the business analysis, would demonstrate the profitability of many health and safety-improving interventions.

##### A. Economic Policies

As just noted, important economic policies can have a significant impact on workers’ safety and health conditions. The most obvious of such policies are those related to the labor market itself. Due to the fact that they are relatively easy to collect and implement, and because they tend to be less resisted by society, payroll taxes have been used by the countries

<sup>25</sup> Antle et al. (1998), in a study of potato production in Ecuador, have shown that if the use of some particularly powerful and harmful pesticides were avoided, the reduction in the harvest was more than compensated by the increase in production generated by the improvements in workers’ health.

of Latin America and the Caribbean to finance everything, from social security and health systems, to social assistance programs and private sector interests. Fiscal and labor reforms aimed at reducing the “excessive” cost of labor can, in most countries of the region, go a long way in reducing unemployment and the incentive for informality, key obstacles to the improvement of work conditions, as the discussion of the previous section has shown.

Fiscal policies can also be used to promote low-risk activities and safe work environments through the use of fiscal incentives to encourage the use of safety equipment and/or to stimulate the development of low-risk industries. Similarly, higher import duties on dangerous chemicals and pesticides have been used as a deterrent to the use of these hazardous products.

Finally, preferred interest rates and/or financing mechanisms can be used to support firms, particularly small and medium enterprises, in acquiring safer equipment and tools. Countries that have lines of credit to promote the development of specific activities or industries could include safety records as criteria/incentive to accessing such funds.

While the policies discussed above can have a positive impact on the health and safety conditions of workers, it must be understood that they may not be economically neutral. Fiscal policies can distort relative prices of inputs and allocation decisions, while the use of tariffs to achieve labor safety objectives can distort commercial policies. Such commonly observed second-best scenarios, in which economic measures often attempt to achieve more than one goal<sup>26</sup>, place policy makers in front of a trade-off between efficiency costs and social benefits, thus requiring a careful assessment of the effectiveness of the policy measure in achieving its desired social goals. Consider, for instance, the case raising tariffs of dangerous pesticides: the higher domestic prices generated by the tariffs may stimulate local production and, therefore, merely induce the substitution from imported to domestically produced hazardous products; or farmers might substitute more potent/hazardous products for a more intensive use of less powerful ones, which would have a negligible (if any) positive health impact on agricultural workers. Thus it might be preferable in some instances, as some countries did with asbestos (where trade pressures from producing countries are significant), to introduce regulatory measures that prohibit the domestic *use* of a product? the sovereign decision of a country? instead of imposing tariffs or trade barriers.

## B. Improving Regulatory and Incentive Systems

It is clear that health and safety conditions at work will not improve in the region without better standards and improved regulatory and/or incentive structures. OSH standards need to be mandatory, universal and enforceable. Mandatory and universal imply that standards are defined by laws that apply to all economic sectors and industries to avoid “defections” and free riders. Enforceability implies that standards must be based on the social and economic reality of the country and must be set at reasonable levels. While being realistic,

---

<sup>26</sup> See for instance Baumol and Bradford, 1970; and Nelson, 1982, for the Ramsey pricing rationale in such conditions.

they should not be construed as an endorsement of the status quo, but rather as an instrument and reference for change.<sup>27</sup>

Regulatory systems, however, should not be limited to the traditional enforcement approach. Occupational safety and health can also be promoted through “smart” regulatory actions designed to change a firm’s “safety culture,”<sup>28</sup> and to increase the degree of workers’ participation, the presence of labor unions, the relative power of the union, and the union’s level of internal democracy. Studies in developed nations have found that occupational safety is greater in countries and industries where there is an open social and political dialogue about safe and healthy working conditions. Also, when unions effectively represent workers, occupational safety is enhanced by creating a favorable climate for protective measures and by creating mechanisms that ensure compliance with safety standards. In these terms, occupational health policies need to explicitly address improvements in relations between workers and management, and support greater “democratization” of industrial relations (see Dorman, 1996).

It must be noted, however, that the regulatory and incentive-based approaches are not mutually exclusive alternatives, but rather form a continuum that reflects the emphasis placed on one scheme or another. In fact, the two approaches tend to reinforce each other. Empirical evidence available from the U.S. (Well, 1996) shows a relatively large impact of a low-profile regulatory system compliance. It shows that government regulatory agencies can substantially change private sector behavior, even with limited resources, because firms tend to make their compliance decisions on the basis of potential, rather than actual, penalties. For example, industrial accidents that can be attributed to a failure by the firm in protecting workers, may subject the employer to costly litigation and judicial awards, to increased workers’ compensation premiums, or to higher ratings by health and general insurers. This suggests that compliance with safety standards is the outcome of a large set of regulatory pressures formed by workers compensation systems, private insurers and the civil/criminal justice system.

The relative emphasis placed by each individual country on regulation or incentive should be based on institutional capacity. Systems that emphasize regulations require a well-organized and financed governmental structure capable of defining, implementing, and enforcing appropriate principles, rules and standards. Systems that emphasize market incentives, on the other hand, require an insurance industry that is large enough to allow competition, and sophisticated enough to be able to address the specificities of the different markets and individual firms.

It must be noted, however, that the implementation of a structure of incentives is a complex proposition that imposes an important set of demands on the overall OSH system. First, the risk-assessment and insurance functions need to be separated in order to avoid conflict of interests. The insurer cannot be responsible for assessing the level of risks, for it will tend to overestimate such risks in order to minimize the likelihood of significant losses and/or to

---

<sup>27</sup> This means that OSH standards should be dynamic and reflect the evolution and development of the country.

<sup>28</sup> The safety culture of a firm can be defined by the importance the company attaches to safety, and its ability and willingness to take effective action and often is the most important determinant of a company’s response to occupational safety regulations.

maximize profits.<sup>29, 30</sup> Second, the number of insurers and risk-assessment firms must be large enough to ensure that neither market is an oligopoly nor an oligopsony.<sup>31</sup> Third, the definition of whether the firm or the insurer contracts the risk appraiser is critical: in the first case the appraiser may have an incentive to underestimate the risk level of the firm in order to obtain a lower premium for its client, while the opposite incentive would apply if the insurer is the client of the risk-assessment company.<sup>32</sup> In either case a strong regulatory monitoring system would be required to detect patterns of consistent underestimation or overestimation of risk. Finally, as noted in the previous section, the presence of an insurance mechanism does not remove the incentive to underreport injuries and accidents. In fact, because both the firm and the insurer share this same incentive, the oversight capacity of the regulatory system may even have to be enhanced. It is therefore clear that a system of incentives will not necessarily require less of the regulatory apparatus of the country; it may actually need a different, and most likely more sophisticated, structure of inspection and supervision.

An emphasis on incentives requires a relatively large and sophisticated financial market from which insurance and risk-assessment companies can develop, and a public sector with good institutional and regulatory capacity. Smaller countries and/or those with weaker institutional capacity should establish systems that give relatively more emphasis to a regulatory structure based on clear and well-defined standards upon which a good enforcement strategy can be executed. Given the constraints faced by such countries, and as discussed above, this approach can maximize the capacity of the system to induce changes on the behavior of economic agents.<sup>33</sup>

The agricultural sector remains a major challenge to the countries of Latin America and the Caribbean, particularly given the large number of rural workers that exist in the region. As discussed in Section III, the characteristics of the workforce and the organization of the sector make it very difficult to implement an effective regulatory system. The establishment of basic rural social security benefit systems (“seguros sociales campesinos”), and the incentives that they may bring, as for example Ecuador and Brazil have attempted, may be a first step, in a gradual process that could remove some of the informality that characterizes the sector and could create some institutional representation and voice for rural workers. As in the case of many economic policies (see the previous subsection), the introduction of such benefit systems can generate trade-offs and disincentives, particularly if not properly implemented. In fact, given the dispersion and disorganization of the sector in many countries, a “heavy handed” or “excessively generous” approach might increase the inaccessibility to these workers. If not ideal in terms of rapidly reducing inequities and minimizing risk exposures, it seems that a gradual and cautious course may be the preferred strategy for most countries.

---

<sup>29</sup> Mandatory insurance coverage minimizes adverse selection. The risk of risk selection (“cream-skimming”) can be minimized via the regulatory enforcement of free selection of insurer by firms.

<sup>30</sup> The Chilean system, perhaps the most sophisticated in Latin America, still does not separate these functions.

<sup>31</sup> Here we also observe a problem with the Chilean model: it is highly concentrated, with 3 firms (“mutuales”) controlling the market.

<sup>32</sup> The insurer and the firm could share the cost of risk assessment. Operational problems can arise, however, if the two parties do not agree on the choice of appraiser.

<sup>33</sup> While the above discussion is static, it is obvious that systems can and should evolve in one direction or another as the needs and characteristics of the country change, and as existing institutional capacity improves.

### C. The Need for Training and Education

The reduction of occupational diseases, injuries and deaths in Latin America and the Caribbean will necessarily require a major effort in training and education. Workers need to be better informed and educated in the use of occupational safety procedures and equipment, particularly in those industries that present relatively high risks, since the positive impact of these measures in such industries can be significant. Managers, on the other hand, need to understand the importance of a healthy and safe work environment to the improvement of morale, to the generation of loyalty to the firm and to the increase in productivity. The indirect costs of accidents such as the loss of production and the damages to equipment, machinery, materials, or facilities, must also be understood. Small and medium enterprises must be a particular focus of such training efforts.

Health professionals need to be trained to recognize occupational injuries and particularly occupational diseases. OSH inspectors also need to be trained. On one hand their role as “prevention agents” must be strengthened, which implies the need to be able to detect not only actual but also potential hazards, and the need to develop a proactive role that promotes positive changes in the work environment. On the other hand they must be trained to use properly their “power of police” when it exists.

Better-trained workers, managers, health professionals and regulators tend to generate better reporting and information systems, which in turn provide the inputs to further improve the quality of training and education.

### D. The Need for Coordination

A strategy that coordinates the efforts and actions of the technical and financial multilateral agencies that are working with occupational safety and health issues in the region is particularly desirable, since the relative strengths of each institution can be used to tackle the complexity of issues that determine the occupational safety and health conditions in the region. Furthermore, not only the relative technical strengths of each institution are complementary, but also their natural counterparts.

The ILO works directly with Ministries of Labor and workers’ representatives. It has the mandate of the countries to deal with labor-related issues, including OSH through the “InFocus Programme on Safety and Health at Work and the Environment” (SafeWork). Its regional office for Latin America and the Caribbean is actively involved in the area, and is supported by the SafeWork program. ILO’s unique tri-partite structure can also bring an important perspective to any coordinated effort in this area. A coordinated effort between ILO, the multilateral financing institutions and other technical bodies would contribute to strengthening the first, which could ? as pointed out in the previous section ? facilitate the progress of labor standards discussions, by removing them from the realm of trade negotiations.

The Pan-American Health Organization has been working with the Ministries of Health of the region, who have approved its Regional Plan for Workers’ Health, which includes efforts to reduce or eliminate risk factors from the work environment, and an emphasis on the strengthening of human resources in the area of occupational hygiene.

The multilateral financing agencies, on the other hand, who have been working only marginally with OSH issues until recently, have important ministries, such as Planning and Finance as counterparts. The increasing recognition by these institutions, that occupational safety and health is a development issue that is generating substantial social and economic costs to the countries of Latin America and the Caribbean, will hopefully bring a new dynamic to the efforts of the region in improving the health and well-being of its workers and their families.

## REFERENCES

- Antle, J.M., D.C. Cole, and C.C. Crissman (1998) – “Further evidence on pesticides, productivity and farmer health: Potato production in Ecuador.” *Agricultural Economics*, 18, 199-207.
- Ashford, N. (1976) – *Crisis in the Workplace: Occupational Disease and Injury*. Cambridge, MA: MIT Press.
- Asociación Chilena de Seguridad (1999) – *Memoria Annual 1998*. Website of the Asociación Chilena de Seguridad.
- Buvinic, M., A. Giuffrida, and A. Glassman (2001) – “Gender Inequality in Health and Work: The Case of Latin America and the Caribbean.” Mimeo.
- Baumol, W.J. and D.F. Bradford. 1970. “Optimal Departures from Marginal Cost Pricing,” *American Economic Review*, 60(3): 265-283.
- Camara, V., and G. Corey (1992) – *O Casos dos Garimpos de Ouro no Brasil*. Pan American Centre for Human Ecology and Health, Serie Epidemiologia y Medio Ambiente. Mexico City: Pan American Health Organization.
- Diamond, P.A. (1977) – “Insurance Theoretic Aspects of Workers’ Compensation.” In *Natural Resources, Uncertainty and General Equilibrium System*, A.S. Blinder, and P. Friedman (eds.). New York. Academic Press.
- Dorman, P. (1996) – *Markets and Mortality: Economics, Dangerous Work, and the Value of Human Life*. Cambridge: Cambridge University Press.
- Drucker, A., B. Crowder, J. Alvarado, R. Gonzalez, and O. Rubio (1999) – *Economic Evaluation of the Occupational Health Impact of Agrochemical Use in Yucatan, Mexico*. Paper presented at the XVth World Congress on Occupational Safety and Health, 12-16 April, S. Paulo, Brazil.
- Dufor, C., P. Lanoie, and M. Patry (1998) – “Regulation and Productivity.” *Journal of Productivity Analysis* 9:233-247.
- Elliott, K.A. and R.B. Freeman (2001) – “Global Labor Standards and Free Trade: The Siamese Twins of the Global Economy.” Mimeo.
- Frumkin, H. (1999) – “Across the water and down the ladder: occupational health in the global economy.” *Occupational Medicine: State of the Art Reviews* 14(3):637-663.
- Giuffrida, A., R.F. Iunes, and W.D. Savedoff (2001A) – *Economic and Health Dimensions of Occupational Safety in Latin America and the Caribbean*. Inter-American Development Bank, Sustainable Development Department, Technical Paper Series SOC-121, Washington, DC.

- Giuffrida, A., R.F. Iunes, and W.D. Savedoff (2001B) – *Occupational Safety in Latin America and the Caribbean: Economic and Health Dimensions of the Problem*. Mimeo.
- Heinrich, H., W. Dan Petersen, and N. Roos (1980) – *Industrial Accident Prevention: A Safety Management Approach*. New York, McGraw-Hill.
- International Labour Office (1998) – *Yearbook of Labour Statistics*. Geneva, ILO.
- Keifer, M., R. McConnell, A.F. Pacheco, W. Daniel, and L. Rosenstock (1996) – “Estimating underreported pesticide poisonings in Nicaragua.” *American Journal of Industrial Medicine* 30(2):195-201.
- Kogevinas, M., P. Boffetta, and N. Pearce. 1994. Occupational Exposure to Carcinogens in Developing Countries. In *Occupational Cancer in Developing Countries*, eds. N. Pearce, E. Matos, H. Vanio, P. Boffetta, and M. Kogevinas. IARC Scientific Publications No. 129. Oxford: Oxford University Press.
- Leigh, J.P., S. Markowitz, M. Fahs, C. Shin, and P. Landrigan (1996) – *Costs of Occupational Injuries and Illnesses*. NIOSH Report U60/CCU902886. Washington DC: National Institute of Occupational Safety and Health.
- Loewenson, R. (1994) – “Small-Scale Industries.” In *Occupational Cancer in Developing Countries*, N. Pearce, E. Matos, H. Vanio, P. Boffetta, and M. Kogevinas (eds.). IARC Scientific Publications No. 129, Oxford, Oxford University Press.
- Maskus, K.E., T.J. Rutherford, and S. Selby (1995) – “Implications of Changes in Labor Standards: A Computational Analysis for Mexico.” *North American Journal of Economics and Finance* 6(2):171-188.
- Medici, A.C. (1999) – “Novas Perspectivas para o Financiamento da Saúde do Trabalhador no Brasil.” Mimeo.
- Nelson, R. 1982. “An Empirical Test of the Ramsey Theory and Stigler-Peltzman Theory of Public Utility Pricing,” *Economic Inquiry*, XX(2): 277-290.
- Nomiyama, M. (1999) – “New Economic Structures and Small and Medium-Sized Enterprises (SMEs) in Japan.” Paper presented at the XVth World Congress on Occupational Safety and Health, 12-16 April, S. Paulo Brazil.
- Oi, W.Y. (1974) – “On the Economics of Industrial Safety.” *Law and Contemporary Problems* 38:669-699.
- Repetto, R., and S.S. Baliga (1996) – *Pesticides and the Immune System: The Public Health Risks*. Washington DC: World Resources Institute.
- Rodrik, D. (1996) – “Labor Standards in International Trade: Do They Matter and What Do We Do About Them.” In *Emerging Agenda For Global Trade: High Stakes for Developing Countries*, Robert Z. Lawrence, Dani Rodrik and John Whalley (eds.). Overseas

- Development Council Essays No. 20, Washington, DC, Johns Hopkins University Press.
- Salazar-Xirinachs, J.M. (2000) – “The Trade-Labor Nexus: Developing Countries’ Perspectives.” *Journal of International Economic Law* 3(2): 377-385.
- Santos, U.D., V. Wunsch, J.C. do Carmo, M.M. Settimi, S.D. Urquiza, and C.M.P. Henriques (1990) – “Sistema de vigilância epidemiológica para acidentes do trabalho: experiência na zona norte do município de São Paulo (Brasil).” *Revista de Saúde Pública* 24(4):286-293.
- Takala, J. (1999) – “Global Estimates of Fatal Occupational Accidents.” *Epidemiology* 10(5):640-646.
- Thaler, R., and S. Rosen (1976) – “The Value of Life Saving.” In *Household Production and Consumption*, eds. N.E. Terleckyj. New York: NBER Press.
- Well, D. (1996) – “If OSHA Is So Bad, Why Is Compliance So Good?” *RAND Journal of Economics* 27:618-640.