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Occupational Health and Safety in Southern Africa : Trends and Policy Issues

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Preface

This paper outlines the major features of the current situation on occupational health and safety in the Southern African Development Community (SADC) Region and the issues that it raises for policy making. It describes major production changes in the SADC region, and how new production methods bring along new occupational hazards.

There are data on occupational health and safety which makes it difficult to examine the impact of these economic changes. The little information that is available suggests, however, that informal sector workers have occupational injury and mortality rates that are similar to those found in the formal sector, and higher rates of occupational illness. In the formal sector, the data indicate that high risk sectors are transportation, forestry, electricity, mining and construction.

The study makes a number of suggestions for future policy. It recommends, first of all, a better monitoring of occupational morbidity and mortality. More data are also needed on the costs and productivity loss of occupational injury and death. Finally, it proposes that national household surveys in Southern Africa should include a survey module on occupational injury and illness.

SAMAT Policy Papers focus on issues and policies in Southern Africa which affect employment policy, labour standards, and conditions of work, including social protection. As such, the series is intended to provide an ILO perspective on these issues, with a view to suggesting ideas and policy alternatives for consideration by policy makers in the fields of labour and economic development. In this way, the Policy Papers aim to provide a basis for technical cooperation between the ILO and its constituents in Southern Africa.

This paper has been prepared by Rene Loewenson of the Training and Research Support Centre (TARSC) in Harare, Zimbabwe. Financial support for this study was provided by the SECHYG Branch of the ILO Headquarters in Geneva. I should add that the views expressed in this study are those of the author and they do not necessarily reflect those of the ILO.

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Summary

This paper outlines the major features of the current situation on occupational health and safety in the Southern African Development Community (SADC) Region and the issues that it raises. The paper notes major production changes in the SADC region, with new production processes and new hazards.

Reported data indicate annual injury rates for wage workers in the SADC region ranging from 0.35 to 49.42 injuries per 1000 workers, with a median of 6.26 injuries / 1000 workers. The data further indicate that the reported occupational fatality rate in the SADC region ranges from 0.85 to 21.6 fatalities / 100 000 workers, with a median fatality rate of 14.02 fatalities / 100 000 workers. Data are however limited so that it is difficult to explore the impact of economic change on occupational health.

Even the most comprehensive notification systems in the region do not cover small scale or informal sector production. Surveys of informal sector workers note occupational injury and mortality rates similar to those found in the formal sector, and higher rates of occupational illness. Informal sector risks include poor work organisation, poor access to clean water and sanitation, ergonomic hazards, hazardous handtools and exposure to dusts and chemicals. Given the growth in informal sector employment, it is proposed that SADC countries address the prevention, monitoring and management of occupational risks and injury in the informal sector, and develop a comprehensive system for incorporating the sector into national programmes.

In the formal sector, reported data indicates that high risk sectors are transport, forestry, electricity production, mining and construction, while workers exposed to mechanical, ergonomic and chemical hazards are most likely to experience injury or fatality. Injury rates vary however between countries, and for different jobs within sectors. Road traffic accidents are likely to be a rising cause for concern. While this reflects the reported patterns, there is a tendency for acute traumatic injury to be reported, and chronic health damage to be under-reported. Hence hazards like chemicals that cause chronic diseases may be underestimated.

Risk management has in the main been practised in the region by the provision of personal protective equipment, which is in fact a **last** line of defence. More effective risk control is obtained by giving a greater emphasis on work environment (engineering) and work organisation (administrative) controls. SADC member states are urged to identify priority areas for risk management and promote safe technologies and improved work procedures. At the same time, the shortages of inspection services calls for discussion of options for improving the overall support of inspection services, such as increased budget commitments, more efficient use of inspectorates and increased use of cost recovery methods to finance inspection services.

While the norms of ILO Convention 155 are generally complied with in the region, with some exceptions, ratification of the core OHS conventions (155, 161, 170, 174) is non existent in the region. In relation to Convention 155 the major gaps to be addressed in law relate to coverage of all workplaces, setting clear rights and duties for tripartite co-operation, explicitly enabling and setting procedures for the right to refuse dangerous work, overcoming the administrative fragmentation of enforcement systems, strengthening penalties and ensuring greater regional harmonisation of standards.

The underestimation of occupational disease is one of the most serious sources of bias in the currently reported data. Reported occupational disease rates of about 14.49 diseases / 100 000 workers are estimated to underestimate actual occupational disease rates using WHO estimates 50-fold. Ad hoc surveys indicate a significant risk of occupational disease, indicating a need for more comprehensive and accurate surveillance and a greater level of professional training and deployment to this end. The paper endorses the resolutions of the recent meeting of occupational health professionals in the SADC Region noting that recognition, training and development was needed across the major categories of personnel, ie occupational safety professionals, inspectorates, occupational nurses, occupational medical practitioners and occupational hygienists, and that this would best be achieved through regional co-operation.

The paper notes the spillover of occupational risks to non employed populations, and the substantial problem of undetected chronic occupational disease in workers who have left employment. The most significant group in this last category that need to be addressed in terms of systems for detection and management of occupational illness are the former mineworkers. Many of these workers were migrant workers and are now spread across the SADC region, often in poor rural communities with weak health infrastructures.

The paper notes the weakness of existing penalty systems and the need to give greater profile to the productivity, trade and investment consequences of improved occupational health standards and infrastructure. This calls for the systematic collection of information on how occupational health improvements have enhanced productivity or market access.

The paper estimates the direct costs of lost work time due to reported occupational injury and fatality at 3% GDP annually. The cost analysis signifies huge potential losses due to illness and injury and a clear economic gain from risk prevention. The paper proposes that better monitoring of occupational morbidity and mortality and that an effort is needed for raising the profile of the costs of occupational injury and death and enhancing investment in prevention.

It is suggested further that Southern African countries, linked to the national household survey programme, implement a survey module on occupational injury and illness to provide a national estimate of the distribution and burden of occupational injury and as a basis for occupational health planning. SADC countries could develop a harmonised survey tool for this module.

1. Introduction

This paper outlines the major features of the current situation on occupational health and safety in the Southern African Development Community (SADC) Region and the issues that it raises for future OHS action. It is intended to provide data to assess the burden and distribution of the health impacts of occupational risk, the progress towards reduction of that risk and the returns for investments in occupational health practice. This type of information is important to assess progress towards agreed standards of occupational health practice and raises the profile of those standards in other areas of planning, in particular economic planning. This was succinctly put at the 1997 Pretoria meeting of ministers of labour, trade union and employer organisation leaders in the SADC Employment and Labour Sector. In reaction to the report of occupational health activities taking place they noted that the absence of agreed performance standards makes it difficult to assess the effectiveness of such activities[1].

The first part of the paper outlines the current situation based on existing data available to the author. The second notes the issues arising from that data base for future areas of occupational health intervention in the SADC region to reduce major areas of occupational risk. The last section suggests the type of information / indicators to be collected for ongoing evaluation of the management of occupational health in the region.

2. The Current Occupational Health and Safety Situation

Major production changes are taking place....

Over the past 15 years the world has seen spectacular economic advance for some countries, while for others, there has also been unprecedented decline. In the SADC region, only Botswana and Mauritius have consistently increased incomes in the 1990s (UNDP 1996). Poverty has persisted even under conditions of GDP growth, signalling a further challenge of widening disparities in wealth and economic opportunity. In SADC countries, the highest 20% of the population controls 10-20 times the share of income of the lowest 20% (UNDP 1996). Extremely rapid changes are taking place in the global economy. While some countries have been able to use these opportunities to compete, many weaker economies have been further marginalised.

In the SADC region, these changes take place in a context of dualistic production systems, with a poorly capitalised and unregulated small scale or informal sector and a formal sector concentrating on primary processing of mining and agricultural goods, construction and transport. A substantial high value manufacturing sector is found in only a few countries of the region. Under recent economic reforms, there have been investments in new production processes and technologies (such as chemical, microelectronic, autoassembly, horticulture production), construction of infrastructures has expanded while other sectors, such as textile and clothing,

[1] SADC Employment and Labour Sector Annual Meeting, Pretoria, South Africa, May 1997

have declined.

..bringing new occupational health risks...

Surveys of occupational health practice have found that Southern African workers are also exposed to new chemical, psychosocial and physical hazards that are emerging from new forms of industrial processes and work organisation (OATUU HSEP 1996).

Liberalisation of labour markets, shifts towards more insecure forms of employment, reduced control on trade, reduction in public spending, reduced real wages and a contraction in public sector employment have been associated with problems of reduced regulation and enforcement of regulation of working conditions. These changes have also led to a pressure to demonstrate economic returns to investments made in the social protection and human development aspects of production.

...that are poorly monitored or reported,

The impact of these changes on the occupational health of people in the region is poorly explored. There is annual use of injury rating, often by sector, to levy rates for the payment of workers compensation insurance premiums. This provides a mechanism for linking payment for the costs of injury with the injury levels. However, as shown in Table 1 below, in many countries of the region these systems are not under state administration and in only one country, Zimbabwe, are they comprehensively linked to the funding of accident prevention and occupational health services [2]. *Apart from the annual use of injury data for insurance purposes, there is little consistent or comprehensive monitoring of trends in occupational health, either as a means of assessing the health impact of production policies, or to mobilise resources towards occupational health measures.*

[2] These data are mainly drawn from injuries reported to the compensation system. As shown in Table 1 for SADC countries, many of these systems are not state social insurance schemes, many operating through private insurers. They do not have common criteria for reporting, some requiring reporting for all injuries with more than 24 hours of lost work time (eg: Zimbabwe), some after longer periods. They do not cover all categories of workers, and have varying and often low compliance rates. These issues will be further discussed in the next section.

Table 1 Estimate of Occupational Injury and Illnesses: SADC Countries

Country and Year (*)		Employment		Administration of compensation	Injury rate / 1000 workers (**)		Fatality rate / 100 000 workers (**)	
Angola		na		na	na		na	
Botswana	1990 1995	234 539		private insurance	0.35		0.85	
Lesotho	1995	653 266		private insurance	na		na	
Malawi	1986 1995	558 000		private insurance	2.59		12.37	
Mauritius	1990 1995	440 000 506 000		social insurance	26.86 12.61		2.95 1.38	
Mozambique	1995	117 572		social insurance			21.26	
Namibia	1990 1995	260 000		social insurance	15.01		15.76	
South Africa	1990 1995	5 200 000		social insurance; mining/construction -private	49.42	89	14.02	93
Swaziland	1994	157 283	95	private insurance	6.26		21.61	
Tanzania	1990	711 800	89	private insurance	4.78		17.98	
Zambia	1995	468 947		social insurance	1.22	93-96	4.47	93-96
Zimbabwe	1995	1 186 649		social insurance	16.74		21.23	

(*) Year given is the latest year for which full data is available
(**) Crude estimates based on combining available data. Rates shown in year they are drawn from.

Sources: 1997 SADC Employment and Labour Sector Annual Report
1996 ILO Yearbook of statistics
1990 ILO World Employment Programme African Employment Report
1994 South African Government Labour Statistics
1990 Swaziland Govt Department of Labour Report
1995 Zimbabwe NSSA Annual analysis of occupational injury and accident statistics

These data indicate that the reported annual injury rates for wage workers in the SADC region range widely from 0.35 to 49.42 injuries per 1000 workers, with a median of 6.26 injuries / 1000 workers. The data further indicate that the reported occupational fatality rate in the SADC region ranges from 0.85 to 21.6 fatalities / 100 000 workers, with a median fatality rate of 14.02 fatalities / 100 000 workers.

Notably, the variation in the data between countries in the region may have more to do with the accuracy of the reporting systems than the real variation in the levels of occupational risk.

Even at workplace level, monitoring of occupational health practice and outcomes is poor. The majority of companies do not carry out environmental monitoring (Sitas et al 1988), doctors do not collect comprehensive occupational histories (Zwi and Ehrlich 1986), occupational health

services do not carry out systematic tests of occupational disease, and in many companies (73% in a recent survey in Zimbabwe) inspections are infrequent or absent and (in 57% of companies in the survey) injury recording or reporting is unsatisfactory, missing or out of date (ZCTU 1993, ZOHSC/NSSA 1997).

The lack of a systematic assessment of occupational health risks, practice and outcomes makes it difficult to assess how economic and production policies are affecting occupational health, the costs of such impacts and the potential benefits to be gained from investments in prevention. It also makes it difficult for policy makers or those who allocate resources to perceive the real gains from resource allocations towards occupational health practice, or to assess the performance of their investments in this area.

...leading to occupational health not being prioritised in planning.

Without systematic indicative information, occupational health outcomes are often not incorporated as factors in production decisions, except in as far as the regulatory framework requires it. Using regulation as a motive for prevention requires that producers perceive that such regulation will be enforced and that penalties for non enforcement will be a deterrent. With the low levels of penalties currently applying (See Table 2) and the weakness of state inspection systems, it is evident that regulation is a *necessary* but not *sufficient* mechanism for meaningful investments in occupational health practice.

Table 2 Penalties Applying for Breach of Occupational Health Law in the SADC Region [3]

	Daily Penalty USd	**Maximum Penalty USd**	**Max. Penalty with Fatal/Injury USd**
Angola	N/A	N/A	
Botswana	$7	$35 / 2 Months	$140 / 6 Months
D.R.Congo	N/A	N/A	
Lesotho	N/A	N/A	
Mauritius	$6	$570 / 1 Year	Not Provided
Malawi	$8	$39	$155 / 3 Months
Namibia	Not Provided	$547 / 6 Months	Not Provided
South Africa	Not Provided	$13 660 / 1 Year	427 322 / 2 Years
Swaziland	Not Provided	$27 / 3 Months	Not Provided
Tanzania	20c	$1 / 1 Month	$4 / 3 Months
Zambia	Not Provided	10c	40c (100 000 Penalty Units)
Zimbabwe	Not Provided	$210 / 4 Years	Not Provided

Source: Loewenson 1996
N/A = Not Available

Greater emphasis needs to be given to productivity and market access gains from OHS investments...

The penalties in law differentiate into three groups, daily incremental penalties for non compliance with standards, penalties for breach of the law, penalties for breach with consequent injury or death of an employee. New provisions in draft law is shown in brackets. Penalties are shown in US dollars based on 1996 exchange rates.

While penalty levels are being reviewed in some countries, the use of penalties as a reactive and coercive mechanism signal a failure to incorporate occupational health issues into core issues relating to production in the companies in the region, ie into productivity, investment and trade. For example, there is evidence that companies using production processes that had improved work and general environmental management have been able to capture new, high value export market niches. There is also evidence that high levels of accident and injury and poor work environments not only represent a significant loss in human terms, but also in production inputs and costs (WHO/OGEIH 1996).

There is a need to give greater profile to the productivity, trade and investment consequences of improved occupational health standards and infrastructure. This calls for the systematic collection of information on how occupational health improvements have enhanced productivity or market access.

In contrast, significant work has been done to monitor changes in public health and link this to economic and budgetary policies. Information on public health targets and selected indicators of health status are used both to motivate and monitor the impact of and adjust policies in and resource allocations to and within the health sector. Basic health indicators have been used to determine critical health thresholds for resource allocations to achieve health gains (Mehrotra 1996). Indicators of child health (mortality, nutrition, immunisation, diarrhoeal disease and acute respiratory infection rates etc) collected and used in a standardised manner internationally to focus attention at head of state and government level on issues of child health, while more recent work on the distribution of the global burden of disease has become important for motivating and planning resource allocations to and within the health sector. These indicators are now being incorporated into 'development' indicators, so that national performance and budgets are not based only on indicators of macro-economic performance, but also on indicators of performance in human development and in sustainable use of natural resources.

Occupational health features little in all this. In Southern Africa, for example, there is no assessment of the public health burden of occupational injury and illness, this information having to be pieced together from a range of ad hoc surveys with huge gaps in the picture. In some countries, such as UK, Pakistan and Ghana, there is an initiative supported by ILO to add a module on the extent of occupational injury and illness to the national household survey programme, particularly the labour market surveys. South Africa has recently added a few such questions to its national household survey programme.

It is suggested, therefore, that Southern African countries, linked to the national household survey programme, implement an additional survey module on occupational injury and illness to provide a national estimate of the distribution and burden of occupational injury and as a basis for occupational health planning. SADC countries could develop a harmonised survey tool for this module.

An example of a questionnaire piloted in Zimbabwe based on the household surveys done in other countries noted is shown in Appendix A.

Existing data suggests high risk areas...

There is nevertheless anecdotal evidence of problems in the interface between rapid changes in economic and production systems and social protection systems. In Zimbabwe's post drought boom production of the first six months of 1997, the fatality rate doubled that in previous years, and injury rates have been increasing in the 1990's[4]. In many countries of the region, injury and fatality rates are high or have increased in infrastructural sectors such as transport, electricity, communication and construction, where fatality rates exceed 30 / 100 000 workers.

...across both formal and informal sectors...

Interviews with workers and managers in different countries of the region indicate that stress arising from production changes, more intense production systems, reduced job and market security and reduced wages are a major problem in workplaces and a factor in workplace safety. Unfortunately, as even the most comprehensive notification systems in the region do not cover small scale or informal sector production, it is not possible to assess how shifts from formal to informal sector work have affected occupational health outcomes. A survey of 1 585 informal sector workers in rural and urban Zimbabwe found occupational injury and mortality rates similar to those found in the formal sector, and higher rates of occupational illness in the informal sector. A fifth of reported injuries resulted in permanent disability, minor and major. Workers in the informal sector reported problems of poor work organisation, poor access to clean water and sanitation, ergonomic hazards, hazardous handtools and exposure to dusts and chemicals (Loewenson 1997). Similar problems have been found in other studies of the informal sector in the region (Jinadu 1987; Lukindo 1993; Mhone 1996; Tornberg et al 1996).

Given the growth in informal sector employment, SADC countries would need to address the prevention, monitoring and management of occupational risks and injury in the informal sector, and develop comprehensive systems for incorporating the sector into national programmes.

...in mechanical, ergonomic and chemical hazards...

The primary focus of any OHS assessment must be the work environment. Systematic information on the extent and distribution of occupational risks and the size of the populations exposed to those risks is not available, and can only be inferred from ad hoc surveys or available exposure records, and from disaggregation of the total working population into the major sectors of employment viz: agriculture, mining, manufacturing, transport, construction and service/other. The major hazards in these sectors are shown in Table 4.

Drawn from data from National Social Security Authority, Zimbabwe 1980-1997 and from reported statistics from ministries of Labour in the ILO Annual Yearbook of Statistics 1996.

Particular occupational risks may be given specific profile, given their economic / health impact. A recent WHO/ILO meeting on the health impact of occupational risks[5] identified the major

occupational exposures at global level to be those shown in Table 5. Local level priorities may be identified from amongst this list. There are other important 'cross-cutting' exposures, such as occupational allergens and carcinogens.

Table 3 Exposures and Injury / Fatality by Sector

Sector	Major Risks
Agriculture	Mechanical (tools, equipment, surfaces); Organic dusts Infectious agents; Manual handling Agrochemicals
Mining	Mechanical (tools, equipment, surfaces); Underground rockfalls Inorganic dusts; Asphyxiants Explosives Manual handling; Noise, heat, vibration
Manufacture	Mechanical (tools, equipment, surfaces); Metal, organic / inorganic dusts Solvents; Chemicals Noise, heat
Transport	Mechanical (tools, equipment, surfaces); Traffic Ergonomic stress; Vibration Long hours and work away from home
Construction	Mechanical (falls, tools, equipment, surfaces); Inorganic dusts Manual handling; Vibration, noise
Service/other	Violence; Traffic Infectious agents; Manual handling Ergonomic stress

Table 4 Major Categories of Occupational Exposure

Major Category of Risk	Specific Important Risks
Chemical	Coal dust; Asbestos dust; Silica dust; Heavy metals, Carbon monoxide; Solvents, Pesticides, Wood smoke; Tobacco smoke (*)
Biological	Infectious agents; non infectious agents
Physical	Noise; Heat; Vibration; Radiation
Ergonomic / Physiological	Manual handling of heavy loads
Safety / Mechanical	Traffic
Psychosocial	Violence/homicide

(*) the latter two are included as they interact with other work exposures to exacerbate risk

Priority may be given to risks have exposure limits set by law, such as silica dust, asbestos dust,

WHO/ILO Consultation on Methods for the Health impact of Occupational and Environmental Risks, Geneva, July 1997

noise and selected chemicals. Where such regulatory limits exist, information on exposed populations should be available from monitoring of legal compliance, extrapolating from sentinel site monitoring where it is done. In other cases surveys of exposure levels may be carried out.

... and in transport, forestry, electricity production, mining and construction sectors.

Which of these are the most common cause of occupational morbidity and mortality in the region? Sectoral data from a range of countries in or close to the region where such data was available to the author is generally presented as the percent of total injuries in the sector, such as shown in Table 6 below. While there is significant variability between countries, sectors that consistently contribute towards a greater proportion of fatalities are transport, agriculture, mining and, to a lesser extent, construction. These make up about three quarters of all fatalities. Injuries are distributed less clearly.

Table 5 Injury and Fatality Data by Sector, Selected African Countries

Sector	% total fatalities			% total injuries					
	Kenya (1)	Zimbabwe (2)	South Africa (3)	Kenya (1)	Uganda (4)	Zanzibar (5)	Liberia (6)	Zimbabwe (2)	South Africa (3)
Mining	nc	20	0.2 (*)	nc	0	0	19	15	5 (*)
Manufacturing Non metallic	85	8	9	88	50	4	21	17	29
Manufacturing Metallic	15	2	6	12	28	2	included above	16	20
Construction	nc	8	13	nc	3	7	5	10	9
Transport	nc	18	39	nc	4	0	na	7	16
Agriculture	nc	28	16	nc	nc	81	na	15	6
Service	0	8	11	0	26	5	22	9	13
Commerce & trade	nc	8	4		8	0	12	8	6
Other	0	0	0.1	0	0	0	21	0	0.3

(*) A share of the mining sector is privately insured so this data does not reflect real levels

(1) Kenya 1992 data, Boyi 1996 (2) Zimbabwe 1995 data, NSSA 1996

(3) South African data, Dept of Labour 1994 (4) Uganda 1994 data, Ojok 1996

(5) Zanzibar 1989 data, Jumja 1990 (6) Liberia 1988 data, Bella 1993

This data is however problematic in that it reflects aggregate 'counts' rather than rates per worker or per work shift. An analysis of injury and fatality **rates** is exemplified with Zimbabwe's 1995 reported data and provides a clearer picture of the distribution of risk across sectors, shown in Table 7 below.

It is suggested that in future for relevant use of the data for risk assessment and comparisons, reporting of occupational injury provide information on rates per 1000 workers.

This assessment of reported injury rates indicates increased risk of fatalities in transport, mining,

communication, forestry and construction, all with rates exceeding 30 deaths / 100 000 workers. While the transport sector itself accounted for 17% of fatal accidents, vehicle or transport related causes account for about a third of fatal accidents in Zimbabwe. High risk sectors for injury are forestry, electricity production, mining, basic metal production, non metallic mineral manufacturing, wood product manufacturing and transport, all with rates greater than 30 injuries/ 1 000 workers.

Table 6 Injury and Fatality Rates by Sector, Zimbabwe 1995

Sector	Total fatalities	Fatalities / 100000 workers	Total injuries	Injuries / 1000 workers
Agriculture	67	18.8	2 406	6.7
Forestry	3	30.4	608	61.6
Mining and Quarrying	51	83.1	2 936	47.8
Food drink and tobacco processing	10	14.8	1 330	19.7
Textile and Leather	1	1.6	513	8.4
Wood and wood products	4	14.0	892	31.3
Paper printing and publishing	1	18.7	256	16.0
Chemicals and Petroleum products	3	3.9	441	17.2
Non Metallic Mineral products	3	22.0	486	35.7
Basic Metal Production	0.00	0.00	683	46.7
Fabricated metal products and machinery	2	2.3	2 208	22.8
Other manufacturing	0.00	0.00	28	13.8
Electricity production	2	17.8	549	48.9
Building and Construction	22	28.6	1 932	25.1
Commerce and distribution	14	11.5	1 203	9.9
Transport and storage	43	120.8	1 075	30.2
National Railways	2	15.1	385	29.1
Communication	3	33.6	152	17.0
Finance, insurance, real estate and business	2	4.4	180	3.9
Local authorities	8	25.4	867	27.5
Personnel services	11	11.6	911	9.6
TOTAL	252	21.2	19 861	16.7

Source: NSSA 1996

Within the same sector, different SADC countries have different reported risks...

Between African countries the risks vary within the same sectors. While reported rates may differ

to a large extent on the basis of different levels of coverage and accuracy in the reporting systems, there are also real differences in the levels of risk and effectiveness of control measures. For example, fatality rates in South African mines, particularly on the newer, deeper gold mines, are double those of mines in industrialised countries, and worse than rates in African countries such as Zambia and Kenya (See Table 8). This is strongly contributed to by the depth of the mines and the inherent risk this poses.

If data on the rates of injury can be made comparable, understanding the causes of higher or lower rates in different SADC countries could yield important locally appropriate information on the measures and systems for preventing risk.

...and within sectors different categories of workers may be at higher risk,...

Within sectors, the risks for different groups of workers vary. This is most starkly revealed in the injury rates for white and black employees in the mining sector in South Africa: In 1972-1975, a conservative estimate of 28 500 black workers were killed on the mines compared with 1 900 Whites[6]. The fatality rate was 1.61 per 1000 for black workers and 0.78 for Whites. This doubling of the risk was clearly related to the type of jobs held by black workers (particularly underground work) compared to the more supervisory roles held by whites (Ellis and Friedman in Loewenson 1996).

Table 7 Comparison in Mine Safety Rates, 1973

Country	Fatal accidents/ 1000 employed
United Kingdom	0.43
United States	0.49
France	0.69
Federal Republic of Germany	0.69
Zambia	0.71
Kenya	0.80
South Africa	1.07
Gold mines-African	1.57
Gold mines - White	1.05

Source: Ellis and Friedman in Loewenson 1996

UN Migratory Labour in Southern Africa 1978 in Loewenson 1996

...due to the particular hazards they are exposed to.

The major causes of injury indicate the potential risk reduction to be achieved by targeting greater attention and resources towards such risks, particularly given the limited resources in many state occupational health systems in Africa. In Table 9 below, the major causes of injury are shown for Zimbabwe, for example, indicating also how these causes are changing. This data indicates that for this country at least, while mechanical (equipment) hazards continue to be the most common cause of injury, road accidents and manual handling have become more significant risks over the five years 1990-1995.

Table 8 Top Five Causes of Injury, Zimbabwe 1990 and 1995

Ranking	Type of Accident		Agency of Injury	
	1990 % total	1995 % total	1990 % total	1995 % total
1	Struck by materials 34	Struck by materials 29	Materials and substances worked on 40	Materials and substances worked on 32
2	Striking/contact with objects 22	Striking/contact with objects 20	Working surfaces indoors 13	Means of transport 13
3	Caught in between objects 14	Caught in between objects 15	Working surfaces outdoors 9	Working surfaces outdoors 12
4	Falls of persons 7	Road accidents 8	Tools 8	Working surfaces indoors 9
5	Road accidents 6	Manual handling 6	Machinery 7	Machinery 7

Source: NSSA (1991) and (1996)

Such data on the top five causes of injury and fatality would be useful to know across all SADC countries.

Again, it is evident that available data is limited and variable. For example, with respect to chemical related accidents, their proportion of total reported injuries and incidence rates / 1 000 workers are shown in Table 10 below for some African countries:

Table 9 Chemical Related Injury, Selected African Countries

Country		Total injuries	Chemical related injuries	% Total chemical related	Chemical injuries /100 000 workers
Tanzania	1990	3 657	146	4.0	20.5
Kenya	1992	1 648	92 (*)	5.6	6.4
Zimbabwe	1995	19 861	441	2.2	37.2
South Africa	1993	9 979	390 (**)	3.9	7.5

(*) includes molten metals with corrosives (**) includes explosives
Source: NSSA 1996, Kamoing 1990, Monyo 1996, Boyi 1996

As shown in the table, chemical related injury rates vary between 6.4 and 37.2 injuries / 100 000 workers. Chemical related causes of injuries rank lower in reported injury than mechanical agents, with materials being worked on, tools, outdoor working surfaces, transport equipment and machinery being far more commonly rated agents causing injury (Zimbabwe, Uganda, Kenya and South Africa). This may also be a reporting bias, with more common reporting of traumatic acute injury than chronic injury or illness in these data sets.

In summary, the data above indicates that high risk sectors include transport, forestry, electricity production, mining and construction, while workers exposed to mechanical, ergonomic and chemical hazards are most likely to experience injury or fatality. Road traffic accidents are likely to be a rising cause for concern. While this reflects the reported patterns, it is noted that there is a tendency for acute traumatic injury to be reported, and chronic health damage to be under-reported. Hence hazards like chemicals that cause chronic diseases may not be adequately recognised for the damage to health they cause.

Managing risks requires improved equipment and procedures...

Risk management has in the main been practised in the region by the provision of personal protective equipment, which is in fact a **last** line of defence. More effective risk control is obtained by giving a greater emphasis on work environment (engineering) and work organisation (administrative) controls. To take this forward, SADC member states would need to identify priority areas for risk management and promote safe technologies and improved work procedures for effecting risk management. This would need to be promoted as part of the core business of planning and implementing production investments, and not simply addressed by inspection **after** the equipment and work processes have already been designed.

Given the real shortage of inspectors in the region, inspectorate efficiency may be enhanced if there were greater proactive identification and promotion of accessible and appropriate safe technologies and procedures.

This would lessen the burden of post-hoc inspection and changes to existing plant and equipment where funds have already been committed to unsafe processes and equipment.

...and improved inspection systems...

At the same time, the lack of adequate budget support for inspection services is consistently raised by both unions and employers, calling for discussion of options for improving the overall support of inspection services, such as increased state commitments, more efficient use of inspectorates and increased use of cost recovery methods to finance inspection services.

..backed by stronger legal standards.

In relation to these major risks, the prevailing legal standards provide an indication of socially accepted norms for risk management. Table 11 shows the current situation in the SADC region in relation to key legal norms provided for in ILO Convention 155, the ILO Core Convention governing occupational health and safety.

Table 11 Occupational Health Standards: SADC Countries (*) Compliance with Example OHS Clauses in ILO C155

Country	OHS law covers all workplaces	Employers obligation to provide safe work	Consultation of workers reps on OHS	Right of workers to refuse dangerous work	Duty of workers to work safely	Notification of occupational accidents	Ratification of ILO conventions 161	167	170	174	176
Angola	n/a	n/a	n/a	n/a	n/a	n/a	no	no	no	no	no
Botswana	factories	yes	no		yes	yes	no	no	no	no	yes
Democ. Rep Congo	n/a	n/a	n/a	n/a	n/a	n/a	no	no	no	no	no
Lesotho	yes	yes	yes	no	yes	yes	no	yes	no	no	no
Malawi	yes	yes	yes	no	yes	yes	no	no	no	no	no
Mauritius	yes	yes	yes	no	yes	yes	no	no	no	no	no
Mozambique	n/a	yes	n/a	n/a	n/a	n/a	no	no	no	no	no
Namibia	yes	yes	yes	yes	yes	yes	no	no	no	no	no
South Africa	yes	yes	yes	partial	yes	yes	no	no	no	no	no
Swaziland	factories	yes	no	no	yes	yes	no	no	no	no	no
Tanzania	in Draft Bill	yes	in draft Bill	no	yes	yes	no	no	no	no	no
Zambia	in Draft Bill	yes	in draft Bill	no	yes	yes	no	no	no	no	yes
Zimbabwe	factories	yes	no (**)	yes	yes	yes	no	no	yes	no	no

(*) Many countries are in the process of legal review so this data reflects the legal situation as available to the author in March 1999

(**) Calls for employer to appoint a H&S supervisor or representative to ensure OHS but no specific requirement for consultation

It also shows the extent of ratification of the core ILO Conventions on occupational health and safety, that is ILO Convention 155, 161, 167, 170 and 176. As evident from the table, while the norms of ILO Convention 155 are generally complied with, with some exceptions, ratification of the four OHS conventions has been realised by only four countries.

This would signal a need to ensure that a systematic process is set in place of upgrading current OHS law to harmonise it with these major ILO OHS Conventions.

In relation to Convention 155 the major gaps to be addressed in law relate to coverage of all workplaces, setting clear rights and duties for tripartite co-operation, explicitly enabling and setting procedures for the right to refuse dangerous work, overcoming the administrative fragmentation of enforcement systems, strengthening penalties and ensuring greater regional harmonisation of standards.

There is a substantial underestimate of occupational disease...

The underestimation of occupational disease and disease related fatality is probably one of the most serious sources of bias in the currently reported data. In 1995, the Zimbabwe compensation system recorded only 172 reported "illnesses" and 35 poisonings, making up only 1% of total reported injuries. Tanzania recorded 11 cases of occupational disease in 1987 and 9 in 1988, making up 0.5% and 0.3% of total reported injuries in those years (Kitunga 1996; Monyo 1996). This ratio of 1:199 compares with an illness:injury ratio of 1:11 in industrialised countries, where occupational health surveillance is more widespread. While the longer life expectancy in these countries may contribute to their higher reported disease rates, even a ratio of 1:50 in illness:injury would lead to quadruple the number of diseases currently reported.

WHO (1997) estimate a global burden of 1 060 000 occupational diseases in Sub-Saharan Africa (See Table 12).

...of up to 50 fold...

Using the disease rates found in Zimbabwe[7], the rate of 14.49 diseases / 100 000 workers would translate to 22 460 diseases annually, or 2% of the WHO estimate. This means that the rates currently reported underestimate the real rates 50-fold (WHO/OGIEH 1997).

[7] That is 172 diseases annually out of a working population of 1 186 649 or a rate of 14.49 diseases / 100 000 workers

...despite indications of high levels of respiratory, chemical related and skin diseases.

In the absence of such surveillance systems, much of the information on the disease impact of occupational risk is drawn from ad hoc surveys that have been carried out in the continent. Such surveys indicate a significant risk of occupational disease.

Table 11 Who Estimates of the Burden of Occupational Illness and Injury in Different Regions of the World, 1996

Indicator	Sub-Saharan Africa	Latin America	World
Non fatal injuries / yr	770 000	2 077 000	28 900 000
Fatal injuries/ yr	9 900	8 900	97 500
Occ disease incidence / yr	537 400 - 1 105 600	407 400 - 803 000	4 240 700 - 10 010 800
Occ disease mortality / yr	70 400	64 200	583 700 - 704 200
Total deaths - all causes	7.9mn	3.0mn	50.0mn
% estimated due to occ injury	0.13%	0.30%	0.20%
Total deaths 15-59 yr olds	1.9mn	0.9mn	11.8mn
% estimated due to occ injury	0.52%	0.98%	0.83%
Total deaths - all causes	7.9mn	3.0mn	50.0mn
% estimated due to occ disease	0.89%	2.14%	1.17-1.41%
Total deaths 15+ yr olds	3.2mn	2.1mn	35.00mn
% estimated due to occ disease	2.20%	3.06%	1.67-2.01%
Indirect estimates			
Working population	155 000 000	179 000 000	2 063 000 000
Incidence of Occ Injury	9 020 000	9 890 000	100 690 000
Incidence of Occ disease	1 060 000	1 020 000	10 680 000
Prevalence of			
-pneumoconiosis	41 200	43 200	
-chronic respiratory disease	252 400	247 100	
-musculoskeletal injury/illness	335 600	332 500	
-cancer	17 300	17 400	
-injury	9 020 000	9 890 000	
-mental disorders	30 500	31 000	
-pesticide poisoning	5 300	4 800	
-other poisoning	12 100	11 700	
-skin disease	210 500	186 000	
-noise induced hearing loss	158 800	150 300	

Source:WHO/OGIEH 1996

Packard (1989) in a review of work related health in Africa describes a number of studies of pesticide and lead related morbidity, accidents, respiratory problems, (especially bysinnosis and asbestosis) and respiratory illness in cement workers, TDI-base foam workers, grain mill workers and wood workers. In most studies, the prevalence data indicated high levels of disease (Packard 1989, Noweir 1986). Surveys in

Tanzania indicate problems in the informal sector of respiratory illness, back pain, joint and muscle pain, headaches, hernia, fungal infection of hands and feet in addition to injury (Kitunga 1996). Prevalence surveys in Southern African countries identify a number of occupational diseases that have been largely underestimated in formal reporting systems, including respiratory disorders in workers exposed to grain, cotton and other organic dusts, in poultry workers and in foundry workers, communicable diseases in health and laboratory workers, occupational cancers in workers exposed to asbestos and occupational dermatitis in petrochemical and cement workers.

...due to inadequate surveillance and occupational health services..

The under-ascertainment of occupational disease calls for a more comprehensive and accurate surveillance of occupational disease. Again this calls for a greater level of professional training and deployment than is currently the case, to ensure that public health practitioners who are often the frontline of health care are aware of and recognise occupational disease and to ensure access to adequate staffed and equipped occupational health services. Zimbabwe is relatively well provided in this respect compared to some of the other countries in the region, with a history of safety training in the public and private sectors. However Table 13 below shows that even for Zimbabwe the population: staff ratios for key categories of occupational health professionals are far too high to offer reasonable service. This signals a significant deficit in a wide range of occupational health skills.

...and inadequate investment in occupational health professional development.

A recent meeting of occupational health professionals in the SADC Region noted that OHS professional recognition, training and development was needed across all the major categories of personnel, that is occupational safety professionals, inspectorates, occupational nurses, occupational medical practitioners and occupational hygienists (NCOH et al 1997). Only one country in the region (South Africa) had training that covered all these disciplines, calling for regional co-operation in advancing most areas of occupational health professional training.

Table 12 Occupational Health Service Indicators, Zimbabwe

Indicator	Year	Ratio All Workers a	Ratio Formal Sector b
Workers / Primary care industrial clinic	1995	16 000 : 1	4 472 : 1
Workers / referral occupational medicine facility c	1995	244 600 : 1	68 333 : 1
Workers / occupational medical practitioner d, f	1996	72 180 : 1	20 160 : 1
Workers / occupational health nurse e,f	1996	27 700 : 1	7 750 : 1
Workers / occupational hygienist		n.a	n.a
Workers / public sector inspector f	1996	259 000 : 1	72 000 : 1
Workplaces surveyed annually per Public Inspector f	1996	43 : 1	43 : 1

a Referring to total economically active population of 4,403 mn (CSO 1993)
b Referring to formal sector workers of 1,23 mn (CSO 1997)
c Includes NSSA (1), Central hospitals (4) and Mining and industrial hospitals (13)
d Employed in an occupational facility. Note only 3 doctors with postgraduate occupational medicine qualifications
e Servicing industrial / occupational health facilities with or without specialised training
f According to communication with NSSA, 1997

Beyond the workplace, other groups are exposed to occupational risks...

There is a wider population exposed to occupational risks however than those monitored in the workplace. There is morbidity and mortality related to production taking place in non employed populations who are also exposed to such risks, such as the spill-over of occupational risks to people living in vicinity of farm, mine and industrial production, exposure through washing of work clothes and through air and water pollution (Packard 1989; Loewenson et al 1991). There is a risk of disease arising from the patterns of employment and movement associated with work, not usually classified as 'occupational' but certainly *work related* (eg: TB and STDs, Maganu 1988).

...and the occupational disease burden is high in those who have left employment.

Migrancy compounds the problem of poor monitoring of long term injury in workers who have already left employment. Follow-up of migrant, former worker populations demands tracing across national boundaries, producing a number of problems in detection, reporting and compensation of illness and injury. Hence while systems **do** formally cover these workers, de facto they are poorly covered. Studies in South Africa and Botswana have indicated that there are thousands of undetected or unreported cases of occupational lung diseases in former mineworkers in the rural areas of Southern Africa (Davies 1993). Surveys have shown that doctors in the rural areas have little knowledge of chest and respiratory occupational diseases and many cases are diagnosed and admitted in error as tuberculosis cases (Dubovsky 1993, Trapido *et al* 1996). Cowie and Van Schalkwyk in 1987 noted in a study of migrant labour to the Orange Free State Gold Mines that the available methods for estimating silicosis in these workers lead to

underestimates of the real level of disease. A study of former mine workers resident in Botswana examined three hundred and four former mineworkers from South African mines for occupational lung disease (Steen et al 1994). A quarter (26.6%) had a history of being treated for TB, and 23,3% had a disabling occupational injury. Eleven miners had been compensated for occupational lung disease under South African law. However, the overall prevalence of pneumoconiosis (>1/0 profusion) was 26.6% and 6% had Progressive Massive Fibrosis (PMF). The study concluded that the established measures for identifying and preventing pneumoconiosis were totally inadequate and that the social costs were not being borne by the compensation system. In a later study of occupational lung disease in ex-mineworkers in Libode district, preliminary data analysed by Trapido et al 1996 indicated that 13% were suffering from pulmonary TB (PTB), 23% had PTB plus pneumoconiosis, 17% had pneumoconiosis in the first degree and 15% pneumoconiosis in the second degree (or a total of 55% with pneumoconiosis with or without TB) (Trapido et al 1996). These studies, and particularly the latter two, present a limited but nevertheless powerful picture of rates of occupational lung disease in excess of 25% in migrant and former mineworkers to South African gold mines 15-25 years after exposure.

Occupational morbidity costs over 3% of GDP...

The economic costs of occupational risks is attracting greater attention, as it links directly with concerns about investments in human development, allocation of production costs and returns to spending on areas of production. There have been a number of studies that have measured and costed lost work time due to occupational injury and fatality. South African records provide an indicative data set of national level lost time. Out of 9 979 incidents in South Africa in 1993, the distribution and total of lost work time are shown in Table 13.

Table 13 Lost Work Time Due to Injury, South Africa 1993

Period of Work Time Lost	Total	Aggregate Time Lost(*) Years
0-2 weeks	1 623	31.2
2-4 weeks	4 063	234.4
4-16 weeks	3 047	586.0
16-52 weeks	284	185.7
permanent disablement >52 weeks	233	4 660.0
Killed	729	14 580.0
TOTAL	9 979	20 277.3

Source: South African Dept of Labour: Labour Statistics 1994

(*) Using the median time lost for those returning to work; and assuming fatalities or non return after 52 weeks lead to 20 years (median work span) lost

This data indicates an average lost work time for injuries and fatalities combined of 2 person years/ incident, and for injuries alone of 0.62 person years / incident. Applying these rates to Zimbabwe's total injuries in 1994 of 18 144 and fatalities of 219 would yield 11 551 lost person years. Applying this to annual average earnings for that year of Z$12 303 / employee would yield a cost of USd18mn in direct costs of lost earnings.

This represents 3% of the national GDP at that time. Notably, this excludes estimates of disease, and does not include the indirect losses of production, equipment losses and medical expenses. It has been estimated in other studies in the SADC Region (BIDPA 1997) comparing wages to output, that each employee produces 4.7 times the amount they are paid. This would yield a production loss of USd83 mn in 1994 due to occupational injury, or 14% of GDP. While this cost analysis is crude, it signifies huge amounts of potential loss, and a clear cost benefit ratio in terms of costs spent on prevention for injury averted.

Clearly this is no more than an indicative figure: on the one hand labour surpluses and the high level of unskilled production make injured labour relatively easy to substitute in Africa, and this is often the case, so that the production losses may be lower. On the other hand, the costs of the loss of a wage earner may ripple widely to the larger number of households dependent on that wage earner
and may lead to unmeasured and even intergenerational health and social costs. Further the available data provides little information on injury and its costs in the informal sector, nor on the costs of occupational disease.

Better monitoring of occupational morbidity and mortality and the lost time, medical and production consequences would enable improved cost benefit assessments at company and sectoral level. This type of data is needed for raising the profile of the costs of occupational injury and death and enhancing investment in prevention.

3. ISSUES ARISING AND AREAS FOR FUTURE WORK

High risks, low resources implies a need for effective action...

According to WHO estimates (WHO/OGIEH 1996), Sub-Saharan Africa has about one tenth of the worlds occupational injuries and fatalities, and about 7.5% of the world's population. The rates are twice that in the established market economies, and the resources to manage the risks and their impact far less than half those available in established market economies. This means that SADC countries need to adopt paths to improving occupational health that reach high risk groups and areas in an efficient and cost effective manner.

The situation described in this paper highlights some of the broad areas to concentrate attention based on existing data, and raises the issue that effective planning demands improved data.

...along a number of priority areas.

This paper highlights a number of priority areas for intervention, based on current data.

1. The paper notes that occupational injury, illness and fatality currently accounts for significant losses, with over 3% GDP losses annually due to these causes. Investments in occupational health and safety can bring gains in productivity and market access. These areas have however been poorly recognised, surveyed or incorporated into policy. SADC member states would need to systematically assess the key impacts of risks due to unsafe work, the returns to investments in occupational health and safety, and the systems through which such investments would be maximised to take advantage of the human and economic gains that exist in improved occupational health and safety.

2. Reporting systems at workplace and national level would need to be strengthened, with a clear protocol on the priority areas for data collection and regular feedback of reported data analysed as injury, illness and fatality rates per 1000 workers, per sector and by cause of injury to enable effective risk prevention planning. Annual reporting of such a standardised data set would enable comparable SADC wide reporting not only of aggregate national rates but of changes within key sectors of economic activity.

3. Improved data collection in some countries calls for stronger enforcement of notification to public authorities of injury, fatality and illness by sector from privately administered insurance schemes. Where this is inadequately provided for by law this would need to be strengthened.

4. On a periodic basis, routine notification systems such as compensation data should be backed by household survey data on occupational injury, illness and fatality as part of the national household or labour market surveys. This would assist to fill the significant gap in information on occupational risks in informal sector production that currently exists in SADC countries. It is suggested that a harmonised data collection instrument be developed for the region to enable comparison of data collected cross SADC countries.

5. This paper suggests that priority high risk sectors are transport, forestry, electricity production, mining and construction, and priority high risk hazards are mechanical, ergonomic and chemical hazards. Road traffic accidents at work are suggested to be an increasing cause of injury and fatality. It is suggested that an effective focus on risk reduction in these sectors would reduce the major current reported burden of injury and fatality in SADC countries.

6. The paper further suggests that the means towards such risk reduction should shift from emphasis on personal protective equipment to greater identification and promotion of accessible and appropriate safe technologies and safe work procedures within these high risk areas. A SADC wide project engaging institutes of technology development could examine the major sources of risk, identify available alternative technologies and promote safe and accessible options. In addition, sectoral level input from labour, employers and government could be used to agree on codes of practice on work procedures in high risk jobs, using the background of ILO work in this area.

7. The paper proposes that greater support be given to inspection services, with discussion on the best approaches to strengthening these services, such as through as increased state commitments, more efficient use of inspectorates and increased use of cost recovery methods to finance inspection

services, as well as on how inspectorates could widen their impact through centralised standards for procedures and equipment.

8. More promotive approaches would need to be backed by improved legal standards. In relation to Convention 155 the major gaps to be addressed in law relate to coverage of all workplaces, setting clear rights and duties for tripartite co-operation, explicitly enabling and setting procedures for the right to refuse dangerous work, overcoming the administrative fragmentation of enforcement systems, strengthening penalties and ensuring greater regional harmonisation of standards. It is noted that despite largely complying with ILO Convention 155 in the region, there are only four ratifications of the OHS Convention and that this is an area for more explicit SADC commitment in relation to labour standards.

9. The general poor or absent coverage in OHS prevention, promotion, law, monitoring or insurance of the informal sector is noted as a significant gap that would need a specific focussed review and set of proposals for national and regional debate.

10. A further identified gap of substantial size is the poor surveillance and reporting and thus weak prevention and management of occupational disease. This is directly linked to the poor provision of occupational health services in the countries of the region, with inadequate training and development of occupational health professionals.

11. The paper endorses the conclusions of a recent meeting of occupational health professionals in the SADC Region which noted that OHS professional recognition, training and development was needed across all the major categories of personnel, ie occupational safety professionals, inspectorates, occupational nurses, occupational medical practitioners and occupational hygienists and that regional co-operation is required in advancing most areas of occupational health professional training.

12. Finally the paper notes the spillover of occupational risks to non employed populations, and the substantial problem of undetected chronic occupational disease in workers who have left employment. The most significant group in this last category that need to be addressed in terms of systems for detection and management of occupational illness are the former mineworkers. Many of these workers were migrant workers and are now spread across the SADC region, often in poor rural communities with weak health infrastructures.

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APPENDIX A: EXAMPLE OF QUESTIONS FOR A MODULE ON OCCUPATIONAL INJURY, ILLNESS AND FATALITY

To be administered to each household member involved in work as part of a national household survey programme.

CORE SOCIO-DEMOGRAPHIC, LABOUR MARKET DATA AS PER ROUTINE HOUSEHOLD SURVEYS.

A: INJURY AND ILLNESS

Have you suffered any accidental injury during the past 12 months? Yes____ No____

Have you suffered any accidental injury caused by your work in the past 12 months? Yes____ No____

_____

Total number of accidental injuries caused by work in the past 12 mths? _____

Total number keeping worker off work for any time _____

Total number keeping worker off work for 24 hours or more? _____

Total number causing worker to consult a doctor/ visit a clinic/hospital? _____

The next 9 questions apply to ONE injury:

The selected injury led to time off work of more than 1 day ____ less than 1 day ____

When did the injury occur? ___

1	In the past three months	2	>3-6 months ago
3	>6-9 months ago	4	>9-12 months ago

What was the cause of the injury? _____

01	Fall of person	02	Struck by falling object
03	Stepping on, striking against object	04	Caught in or between objects
05	Over exertion or strenuous movement	06	Exposure to extreme temperature
07	Exposure to electric current	08	Exposure to harmful substances
09	Machinery	10	Transport equipment

11 Other, specify: _____

Effect of the injury ___

1	No permanent effects	2	Permanent effects, able to work in same job
3	Permanent effects, able to work, not in same job	4	Permanent effects, not able to work at all

Does the injury still interfere with your ability to do work? Yes ____ No ____

Was the injury reported to the Workers Compensation Fund? Yes ____ No ____

Did you receive compensation for the injury? Yes ____ No ____

I am now going to ask you about health problems or illness due to work.

Have you stopped working during the past 12 months due to any health problem (illness) related to your work? Yes ____ No ____

Have you stopped working during the past 12 months due to any health problem (illness) that was *aggravated* by your work? Yes ____ No ____

Has anyone else in your workplace been affected in the same way? Yes ____ No ____ If yes, number: ____

Has anyone in your enterprise died due to an accident at work in the past 5 yrs? Yes ____ No ____ If yes, number: ____

How many people are employed in your workplace in total ____