TRENDS IN OCCUPATIONAL HEALTH AND SAFETY POLICY AND REGULATION – ISSUES AND CHALLENGES FOR SOUTH AFRICA

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LIST OF ABBREVATIONS

ANC	African National Congress (South Africa)
ASV	Arbetarskyddverket or Work Protection Board (Sweden)
COIDA	Compensation for Occupational Injury and Diseases Act (South Africa)
COSATU	Congress of South African Trade Unions
DoF	Department Of Finance (South Africa)
DoL	Department Of Labour (South Africa)
EC	European Commission
EU	European Union
GEAR	Growth, Employment and Redistribution (South Africa's macroeconomic strategy)
HSA	Hazardous Substances Act (South Africa)
HSC	Health and Safety Commission (United Kingdom)
HSE	Health And Safety Executive (United Kingdom)
ILGRA	Intergovernmental Liaison Group on Risk Assessment (United Kingdom)
ILO	International Labour Organisation
IWG	Intergovernmental Working Group (Canada)
LRA	Labour Relations Act (South Africa)
MHSA	Mines Health And Safety Act (South Africa)
MOSA	Machinery Occupational Safety Act (South Africa, now repealed)
NACOSH	National Advisory Committee on Occupational Safety and Health (USA)
NEDLAC	National Economic Development and Labour Council (South Africa)
NEMA	National Environmental Management Act (South Africa)
NGO	Non-governmental organisation/s
NIOSH	National Institute for Occupational Safety and Health (USA)
NOHSC	National Occupational Health and Safety Commission (Australia)
ODMWA	Occupational Diseases for Mines and Works Act (South Africa)
OHS	Occupational Health And Safety
OHSA	Occupational Health And Safety Act (South Africa)
OSHA	Occupational Safety and Health Administration (USA)
SACP	South African Communist Party
UK	United Kingdom
USA	United States of America
WBC	Workers' Compensation Board (British Columbia, Canada)

ABSTRACT

Changes in South African legislation have been inspired by an approach to OHS policy and regulation which first emerged in the 1970s and which broke with traditions established over more than a century ago, at the time of the industrial revolution in Europe. This paper examines the broad features of the "new" OHS model, assesses whether it facilitates the resolution of basic conflicts and then evaluates the changes that have occurred in South Africa. The paper concludes with a discussion of the challenges facing South Africa. It is shown that the new OHS model involves changes in the form and substance of policy and regulation that have significant ramifications for institutional design and practice. Changes in form encompass the emergence of national policy, the adoption of national legislation and the creation of national institutions. Changes in substance emphasise prevention, participatory processes, performance standards and mechanisms aimed at reconciling competing pressures. It is argued that despite sweeping changes to OHS law in the last decade, South Africa's system remains seriously deficient in a number of respects. The complex and fragmented structure of the overall OHS system remains virtually untouched. Not only is fragmentation and inconsistency a problem but also the system is inward looking, and the assumptions implicit in new legal formulae have not been fully appreciated. For example, changes in law have been driven by a deep and justifiable distrust of insular and unilateral decision-making and stress participatory processes. However, the application of rights which support participatory processes, such as the right participate, to representation and to know, is not straightforward. It is necessary to satisfy a number of conditions if these rights are to be made meaningful. Finally new concepts introduced such as risk assessment, are not uncontested. While risk assessment provides a basis for evaluating and prioritising risk, it is not value free. New uncertainties and tensions are introduced. Further structural and programmatic change is required if the changes introduced in the last decade are to yield the desired results.

SOUTH AFRICA -POLITICAL CONTEXT

' This Constitution provides a historic bridge between the past of a deeply divided society characterised by strife, conflict, untold suffering and injustice, and a future founded on the recognition of human rights, democracy and peaceful co-existence and development opportunities for all South Africans, irrespective colour, race, class, belief or sex.' -Preamble to the South African Constitution

Post-apartheid South Africa is a society in transition and far-reaching legal and policy reform is in progress. Many changes in the country's political, social and economic life are taking place simultaneously. The overhaul of the legal system especially reflects the magnitude and the depth of policy and institutional change contemplated. Since the 1994 elections, the repeal of apartheid statutes and the drafting and revision of new legislation has been a priority. The new statutes emphasise human rights, a commitment to equity and the principle of inclusion. Similarly these values inform initiatives to re-organise public institutions. See Appendix 1 for more background information and pertinent demographic details.

The laws regulating labour relations and conditions of work were among the first to be revised and several pre-date the first democratic elections and the interim Constitution in 1993, and the adoption of the final Constitution in 1996. Contained in the Constitution is a Bill of Rights which includes a clause on the environment which also speaks to occupational health and safety. This clause entitles *"everyone… to an environment that is not harmful to their heath or well being"* and *"for the benefit of present and future generations"* requires that *" legislative and other measures"* are established that *".prevent pollution and ecological degradation,...promote conservation…and..…sustainable development"*. Clause 24 creates a constitutional foundation for the provisions of the Occupational Health and Safety of 1993 (OHSA) and the Mines Health and Safety Act of 1996 (MHSA). Both laws draw heavily on concepts such as enabling legislation, goal setting (as opposed to prescriptive legislation), self-regulation, internal/external responsibility systems, health and safety management systems, risk management and the "hierarchy of controls" (for the control of occupational hazards) and stakeholder participation.

The OHSA and the MHSA make a radical break with past approaches. They were adopted partly in response to pressures applied by trade unions and in the case of the MHSA also come in the wake of mining disasters which exposed serious shortcomings in enforcement and management practice. As indicated in Tables 1, 2, 3 the full extent of occupational injury and disease is not known. More occupational injury data than occupational disease data are available. Workers employed by unregistered

employers and in the informal sector particularly are underrepresented. Nevertheless in 1996, 969 occupationally related deaths were reported together with 14 805 injuries involving an absence from work of at least 14 days (COMSA1997 ; Department of Labour1997). In the same year, 4 013 occupational disease claims were filed (Benjamin and Greef1997)p110. It is estimated that occupational disease and injury absorb 3.5% of the country's gross national product i.e. 16,98 billion in 1996 (Benjamin and Greef1997)p115. Amongst miners, it is estimated that the occupational disease burden amounts to 9,96 million in unpaid compensation benefits and involves 196 000 South African miners and 84 000 non-South Africans (Trapido, Goode et al.1998)p28. It is also important to note that occupational injury and disease does not affect all groups in South Africa equally. Most of those injured at work and who contract occupational disease are black and low wage earners (Table 4).

While the promulgation of the OHSA and the MHSA is significant, both laws are the result of a piecemeal reform process. Other elements of the occupational health and safety system are affected, but remain intact, often as separate entities subordinated to the strategic and organisational imperatives of different government departments. Consequently changes to the system as a whole are dependent on the support of several departments and their willingness to accept structural and organisational change.

Prospects for further reform also hinge on conditions in the wider political environment. Commitment to justice, equity and the eradication of poverty is the basis of the tri-partite alliance between the governing party, the African National Congress (ANC); the Congress of South African Trade Unions (COSATU) and the South African Communist Party (SACP). It also at the root of debates and differences over macro-economic, labour market policy and trade policy. In essence while there is consensus about the need for justice, equity and economic development which benefits South African society as a whole, and these principles and values are explicitly expressed in policy and legislation, the development of practical strategies which balance ostensibly competing and contradictory goals presents considerable challenges. For example, many South African businesses are not in a position to compete successfully in the global market, following years of isolation, neglect of human resources and low investments in technology and research. Under these circumstances, pressures to contain labour costs and improve productivity on the one hand and on the other, to make resources available to establish and maintain safe systems of work, appear to be contradictory.

In addition, the public sector is widely regarded as inefficient and overstaffed. Racial and wage imbalances also plague this sector. A restructuring programme provided for in the Constitution has been underway for some time. The main aims of restructuring are to reduce employment levels, rectify wage and staffing imbalances and simplify remuneration schedules. The privatisation of state assets and state run enterprises such as the Telkom, Eskom and Transnet that dominate telecommunications, energy services and rail transportation respectively is also underway (Department of Finance1988)Appendix.

Whether, given current priorities, the will and resources are available to establish a new regime for OHS regulation and governance is a moot point. Setting out the issues clearly and developing well-designed and appropriate organisational and strategic models is nonetheless crucial. There is still room for debate and argument. As indicated by the Department of Finance in the document in which it spells the country's macroeconomic strategy, out GEAR (Growth, Employment and Redistribution)[1], the government remains

[1] The core elements of GEAR which emphasises fiscal restraint, are :

- Budget reform to strengthen the re-distributive thrust of expenditure
- Fiscal deficit reduction contain debt service obligations, counter inflation and free resources for investment
- An exchange rate policy that keeps the real effective rate stable at a competitive level
- Consistent monetary policy to prevent a resurgence of inflation
- Gradual relaxation of exchange controls
- Tariff reductions to contain input prices and facilitate industrial restructuring, compensating partially for the exchange rate depreciation
- Tax incentives to stimulate new investment in competitive and labour absorbing projects
- Speeding up the restructuring of state assets to optimise investment resources

committed to maintaining an open and consultative approach and developing a credible and coherent policy framework (Department of Finance1988)chap.10. In the final instance, the adoption of coherent and consistent OHS policy is only possible if the range of policy options and competing claims are made apparent to the key decision-makers in government.

BROAD OVERVIEW OF TRENDS

Present day approaches to health and safety policy and regulation are rooted in the 1960's when trade unions in many countries turned their attention to issues related to the "quality of working life" such as job security, job satisfaction and occupational health and safety. Later in the decade heightened community awareness of the industrial origins of environmental health issues caused workers and their unions to "adopt a more questioning approach to potential hazards in the workplace"(Creighton and Gunningham1985)p8. Public and worker insistence that "something be done" led to review and revision of occupational health and safety policy and regulation. In the 1970s new laws and policies which were national in ambit were adopted in a number of countries. These changes in law and policy established a new framework for occupational health and safety. Institutional mechanisms were created to ensure that conflict over health and safety related issues was managed more effectively and resolved more equitably. Employers were encouraged to engage with workers and introduce strategies to address health and safety issues on an ongoing and systematic basis.

In the United States in 1970, the Occupational Health and Safety Act was passed. In terms of this act, a standard setting and enforcement agency, OSHA (Occupational Safety and Health Administration) was established, NIOSH (National Institute for Occupational Health and Safety) was created to provide research and technical assistance, and NACOSH (National Advisory Committee on Occupational Safety and Health) was appointed. Representatives of both labour and management (Ashford1976)p236 are included amongst the members of the advisory committee. In 1974, in Britain the Health and Safety At Work Act was promulgated and the Health and Safety Commission (HSC) a tripartite policy-making institution was set up together its inspection and enforcement arm, the Health and Safety Executive (HSE) (Dawson, Willman et al.1988)p184. In Sweden in the early 1970s, the ASV (Arbetarskyddverket or Worker Protection Board), an independent agency which was established under the Worker Protection Act of 1949 to oversee the promulgation and enforcement of regulations, was revitalised (Kelman1981)p3. In 1978 a new law, the Working Environment Act was passed (Oscarsson1985)p159. In other parts of Scandinavia, namely Norway and Denmark similar laws were adopted in the mid-70s (Gustavsen1985)p141, (Benjamin and Greef1997)p77. In Italy, worker participation and protection from health and safety hazards were boosted by the Worker's Statute of 1969 and the National Health Service Law of 1978 (Misiti and Bagnara1985)p41. In Germany legal and policy reform (Naschold1985)p239. Other countries in which similar reforms were undertaken include France, Belgium, the Netherlands and Finland (Ashford1976)p502, (Benjamin and Greef1997)p65.

- An expansionary infrastructure programme to address service deficiencies and backlogs
- Structured flexibility within the collective bargaining system
- A levy system to fund training on a scale commensurate with needs
- Expansion of trade and investment flows in Southern Africa
- Commitment to the implementation of stable and co-ordinated policies. Department of Finance, S. A., (1988). Growth, Employment and Redistribution. A Macroeconomic strategy. Pretoria, South African Government.Chapter 1.

Criticism of GEAR by the trade union federation, COSATU centred on the priority (or rather the lack thereof) given to job creation, reconstruction and development. However COSATU's generally favourable comment on the 1998/99 budget suggests that greater consensus between the government, labour and business over macroeconomic policy is emerging The federation is heartened by the government's willingness to adjust some of the "more rigid aspects of the GEAR framework" COSATU, (1999). COSATU's response to 1999/2000, Congress of South African Trade Unions (COSATU). South Africa. **1999**.

The main thrust of these changes, that employers should manage health and safety in a proactive manner, broke with past practice. The identification and control of hazards became a priority. Not only did employers' responsibilities change but the state's role in standard setting, technical support and enforcement also enlarged. In particular, the state's role in regulating occupational health and safety no longer centred on compensation for injury (and later, disease) sustained in the course of employment. For over 100 years, since the scale of disease and injury associated with the Industrial Revolution first become evident (Dawson, Willman et al.1988)p3, (Drake and B1983)p1-3[2], compensation, i.e. distribution of the burden of loss, had been the main focus of state regulation.

Changes in law and policy also affected suppliers to industry and the manufacturers of equipment and materials used in industry. Suppliers and manufacturers were charged with responsibilities to design, construct and manufacture articles or substances that were safe and without risks to health when properly used, and to provide sufficient information to enable safe operation or use.

Workers were accorded both rights and responsibilities. Over time worker rights expanded to include a right to information, to consultation, to participation in decision-making (to various degrees) and to refuse to do work believed to present an imminent danger to safety or health (ILO1997)v1, p23.1-23.62. Workers' responsibilities were conceived as twofold. Firstly, they involved an obligation to co-operate with managers in effort to secure higher standards of health and safety, and secondly a duty to take reasonable care of their own health and safety as well as that of others likely to be affected by their actions or omissions.

In the ensuing decades, the 1980's and 1990's, the new national policy and enabling regulatory framework model for OHS endured despite recessions in Europe and the USA which reduced public service expenditure and the election of conservative governments traditionally hostile to "big government" and state intervention. Over the years the model has influenced developments in a number of other countries, most notably Canada, Australia, New Zealand, Namibia, Lesotho, Swaziland, Malaysia, Zimbabwe, Hong Kong and South Africa (Benjamin and Greef1997)p62-83, (Creighton1985)p99. Furthermore the decision of the European Community in the mid-1980s to harmonise health and safety measures as part of process of facilitating economic integration and the establishment of the European Union a few years later in 1992, resulted in the new OHS model becoming the standard for Europe. It is set out in the Framework Directive (89/391/EEC) of 1989 which applies to all the member countries of the European Union (EU). In 1995, EU members included Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom (ILO1997)vol.1, p23.1-23.62

KEY FEATURES OF THE NEW MODEL

Co-operation between workers, employers and government in the elaboration and implementation of occupational health and safety measures at the national or regional level is common in a significant number of countries. *- International Labour Organisation, 1998*

Changes in form and substance of OHS policy and regulation can be described in terms a few salient features, evident from comparison of the legislative arrangements in a number of countries (Benjamin and Greef1997)chap.3, (Kelman1981)p81and 221, (ILO1997)vol.1 p21.1-21.37, (Ashford1976) chap.11; (WBC1996)p1-18. These changes are summarised in Tables 5 and 6.

[2] The notion that compensation systems provide employers with a financial incentive to reduce workplace injuries and illnesses persists despite evidence that such systems rarely have this effect:

- Compensation costs are low and below the true cost of injuries or illness to workers and their families.
- The relationship between OHS performance and changes compensation premiums are obscured by complex rules and timing.
- Typically changes in performance do not correspond to changes in premiums

Beckwith, G. C. The myth of injury prevention incentives in workers' compensation insurance. Work, health and environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guildford Press.p110-112.

Form of Legislation

Generally, in most jurisdictions the reorganisation of the legislative framework involved the following:

- The consolidation of several laws into a single general law of wider ambit, containing general provisions and supported by more detailed codes pertaining to specific industries or occupations.
- The harmonisation of standards within states or countries.
- The adoption of explicit national policy and the creation of new institutions to facilitate the implementation of the policy adopted.

Changes in Substance

Reorganisation of the legislative framework was generally accompanied by changes in the substance legislative provisions. The most striking of these involve:

- The obligation to manage OHS proactively. This obligation placed on employers signalled shift from a reactive to preventative approach.
- The introduction of participatory processes that made the decision-making more open and transparent.
- The introduction of measures aimed at reconciling ostensibly competing concerns.

Consolidation and Integration

Traditional approaches to OHS were unsatisfactory in many respects:

- Historically, health and safety legislation developed in a piecemeal fashion and without reference to any coherent plan or policy. Legislation was essentially reactive, formulated in response to specific hazards. For example when legislators become aware that lead exposures were hazardous, a law was passed against it (Gunningham1985)p24.
- Legislation was geographically and functionally specific i.e. designed to cover premises or processes of a specific kind. For example, regulations dealing with work at heights or methane gas exposures might only apply on construction sites and to coal mines respectively, even though these hazards were present in other workplaces as well. Consequently not all workers were afforded protection against a particular hazard and in some cases, protection was afforded only in specific situations. The specificity of OHS legislation favoured a literalism that was unsympathetic to the circumstances of injured workers and contrary to the spirit of the law. Gunningham (Gunningham1985)p25 cites a case in Australia in which a man was injured by a piece of wood flying out of an unfenced machine. Although an employer had a statutory responsibility to guard dangerous machine parts the court held that this duty had not been breached. It found that that the obligation was to *guard against contact* with dangerous parts *not against the ejection* of dangerous objects. Another example of literalism comes from the United Kingdom. An electrician received an electric shock while repairing a neon light installation a cinema, fell and sustained an injury. The courts ruled that the incident not subject to the provisions of the building regulations which dealt with repair or maintenance buildings because the sign was *on* but *not part* of the building (Drake and B1983)p6.
- Legislation was designed to address physical hazards and could not be adjusted to address either the hazards associated with an increasing number and variety of toxic substances or the risk of catastrophic accidents associated with large scale of industry. Both defied description in geographic and functional terms. In addition new toxic substances were emerging at a rate too numerous to allow for individual cataloguing and assessment.
- Furthermore legislation failed to recognise the influence of work systems and organisational priorities upon attitudes, behaviour and the physical work environment.
- Finally, legislation was formulated at a number of levels, municipal, provincial or state, and national or federal. This resulted in a haphazard patchwork of different administrative arrangements for similar concerns, differences in the location and level of state authority, overlapping responsibilities, differences in approach and work philosophies, compartmentalisation of expertise and facilities, and difficulties in determining the extent of OHS problems in aggregate.

Given the manifest inadequacies of piecemeal arrangements and highly specific regulations, the main thrust of regulatory reform in Europe and the USA in the 1970's, and later in other jurisdictions, was to create a more unified and integrated system and discourage unhelpful literalism. Simultaneously a new type of standard was introduced requiring that safe systems of work be established as opposed to simply complying with detailed regulations.

Greater unification would enable the state to contribute workplace OHS more effectively and eliminate inconsistencies in standards and approach (Drake and B1983)p34; (Gunningham1985)p26-27; (Dawson, Willman et al.1988)p3; (Benjamin and Greef1997)p107. Other benefits anticipated included more effective use of limited resources by reducing duplication of regulatory and enforcement efforts, improved technical capacity by the pooling of expertise and less complexity for industry by establishing a single set of rules.

Consolidation of a several laws into a single general law of wider ambit involved the drafting of general provisions and the creation a supporting body of more detailed codes pertaining to specific industries or occupations. It has been attempted at supranational, national and state or provincial level. The recasting of health and safety related responsibilities and standards in a more general form that was less prescriptive, and focussed on outcomes and safe systems of work facilitated the extension of statuary provisions to a wider range of situations. These include self-employed persons whose activities could endanger other workers or members of the general public, people who could be affected by industrial or commercial activities, and manufacturers and suppliers of industrial equipment, materials and chemicals

The adoption of non-prescriptive standards or performance standards as they are more widely known has not however been problem-free. Such standards are more difficult to interpret, monitor and enforce than specification standards viz.

- The requirement that employers assess health and safety risks can be interpreted in a variety of ways. To avoid confusion and uncertainty, some regulatory agencies have developed supplementary guidelines that describe different risk assessment methods and their application.
- Enforcement is more demanding since compliance is harder to assess. Inspectors require greater knowledge of work processes and are required to exercise more discretion and personal judgement.
- Performance standards may dis-empower workers. In 1990 Jim Weeks, an official of the United Mineworkers Union of America, said that the replacement of specific ventilation standard with a performance standard made "it more difficult for miners on the job to monitor their own workplace" (Weeks1990)p36. The specific requirement to keep the brattice within 10 feet of the face was replaced with a more general provision to keep dust concentrations below 2.0mg/m3.

Performance standards have thus both benefits and disadvantages. Experience suggests that it is imprudent to adopt such standards without at the same time providing well-drafted guidelines, advice and support services. Successful application of performance standards is particularly difficult when the techniques or technology to be employed are not widely appreciated, inspectors have limited training and expertise, and workers are expected to contribute to enforcement efforts[3].

Harmonisation

While national OHS laws have been instrumental in harmonising standards and approach, it is not the only tool that has been used to bring about consistency within national states. National bodies concerned with policy and strategy have been used to initiate a incremental process of harmonisation which unfolds over a long period. Australia is an example of a country that has adopted this approach. While each state in Australia has its own enabling act supported by more specific codes, the National Occupational Health and Safety Commission (NOHSC) a tripartite body created by the federal government, is responsible for development of national standards (WBC1996)p12.

In Canada, where like Australia enabling legislation has been adopted at state level, this approach failed. An attempt to bring about harmonisation at national level was made in 1992 through formation of the tripartite Intergovernmental Working Group (IWG), but was subsequently dropped (WBC1996)p13.

It should be noted that the NOHSC in Australia was established by statute where as the IWG in Canada was essentially a voluntary body.

[3] David Weil, argues that a system of specific standards provides a minimum baseline for the practices for which all employers should held accountable and that well-crafted standards are particularly helpful to small- and medium sized employers. He recognises however that these benefits do not always outweigh the disadvantages. The key is to find an appropriate balance and mix of measures and standards Weil, D. Reforming OHSA. Modest proposals for major change. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guildford Press..

The incremental approach to bringing about uniformity in standards has been criticised on several accounts (WBC1996)p13, (Walt1994)p48-50:

- It is inappropriate in circumstances in which significant social change is sought.
- The standards adopted could represent the lowest common denominator.
- Individual states or provinces tend to resist harmonisation in order to maintain territorial control and independence.
- Inputs into the harmonisation process are less than optimal, because stakeholders are absorbed by the demands of their own organisations and institutions.
- Drawn-out processes are likely to be abandoned when political and economic circumstances change. For this reason an incremental approach is particularly inappropriate in which social conditions are unstable or unpredictable.

National Policy and National Institutions

National policies and national institutions flow from the adoption of OHS national law in many countries while in others such as Australia, national institutions have been established in order to oversee the development of uniform laws and standards.

Policies define the norms for achieving safe and healthful workplaces. Typically these include commitments to the prevention of occupational injury and disease, set out employer obligations and establish the basis for worker involvement (Dawson, Willman et al.1988) pxv, (Gunningham1985)chap.2.

National institutions are typically responsible for policy development, standard setting, enforcement related activities as well as, in some cases, research. Specific arrangements differ. In the United Kingdom and Australia for example, policy and standard setting functions are distinguished from enforcement-related activities while in the USA, a single institution is responsible for standard setting and enforcement while another is responsible for research.

Even though national policies and institutions may be based on national law, conditions in the wider political and economic environment shape the way these policies are implemented and these institutions operate. Explicit connections between national OHS policies and overall economic policy tend to be made jurisdictions in which there is a greater degree of social solidarity, and at times when labour-friendly governments are in power (Dawson, Willman et al.1988)p184.

In Britain for example, the law defines the role of HSC, the body with has oversight responsibilities, in both general and specific terms. The HSC's general responsibility is to do "such things and make such arrangements as it considers appropriate for health, safety and welfare in connection with work". Its specific responsibilities are to ensure that appropriate research is done, pertinent information is made available, to appoint advisory committees, propose regulations that have force of law and issue codes that under certain circumstances also have the force of law. In discharging its responsibilities the HSC has an obligation to consult interested parties (Dawson, Willman et al.1988)p183-184. In Australia the NOHSC's responsibilities are defined in similar terms to the HSC in Britain (NOHSC1999).

Despite these legal definitions the role of these institutions changed as political circumstances changed. In both Britain and Australia, the new OHS framework was created when their respective Labour parties were in government. Initially their work, was seen to contribute to a long-term economic strategy based on the concept of industrial democracy. Improvements to OHS were envisaged as part of a plan to improve productivity through worker involvement, improvements to the work environment and job satisfaction (Willis1985)p90-91, (Dawson, Willman et al.1988)p183-186. When conservative governments came into power, industrial democracy was no longer in vogue and the roles of the HSC and NOHSC reverted to a narrower concern with conditions in the workplace.

Similarly, in USA, OSHA was introduced under the more labour-friendly administration of the Democratic Party, following a mine disaster in West Virginia in which 78 miners lost their lives. The new law did not however signify a shift in social policy from the free market towards social democracy and throughout 1970's the law and agency responsible for its implementation were central to bitter debates over the extent and legitimacy of government intervention. Nonetheless, the Occupational Health and Safety Act established a new set of relations. Interested parties could present evidence and argument on proposed standards. They could also review and appeal the implementation and enforcement of standards. Workers

were afforded limited rights to information, representation and to refuse dangerous work (Levy and Wegmen1995) chap.9, (Kelman1981)p10. Under President Carter, OSHA adopted a firm posture which produced standards for lead, cotton dust and benzene and the Interagency Regulatory Liaison Group in which OHSA participated helped to develop a co-ordinated approach to economy wide risk reduction. When the Republican Party came into power in 1981, OHSA's standard-setting and enforcement capacity was restricted and its course was reversed. Budgets were cut, enforcement staff were laid off, programmes were cancelled and standards setting reverted to a case-by-case approach (Noble1997)p70-71.

Proactive management of OHS risks

The requirement to prevent occupational disease and injury viz. to establish and maintain systems of work that are safe and free of health hazards, addresses the conundrum that it may not always be in an employers' interest to minimise such hazards.

In some situations the cost of hazard abatement exceeds the costs of accidents and disease to the employer since much of these are externalised onto workers, their families and society at large (Gunningham1985)p37, (Head and Leon-Guerrero1997)p320-322. In others, instituting precautionary measures may undermine the viability of an enterprise by slowing down production or increasing production costs (Gunningham1985)p38, (Buchanan and Scoppetuolo1997)p341.

In the corporate setting, the business culture may further exacerbate the situation by encouraging short-term thinking, inappropriate cost-constraint, and piecemeal solutions. For example, senior managers may not be amenable to investigating OHS problems, drawing attention to them or spending money on them because of the constraints imposed by their own conditions of employment. Their appointments may be short term and contingent on financial results that are reported or made public on a quarterly basis.

Of course there are industries and times at which high standards of health and safety coincide with high levels of productivity and profits but the coincidence of good OHS practice and profitability cannot be assumed. Events in the chemical industry illustrate this point well. Investments in health and safety are generally perceived to be in the industry's interests since the consequences of a single incident can be disastrous. However, experience has shown even the chemical industry may neglect OHS under straitened circumstances. The Flixborough disaster in the UK in 1974 and the Bhopal disaster in India in 1984 are stark illustrations of this fact (Gunningham1985)p38, (Jasanoff1994)p254.

Although the obligation to address OHS hazards proactively is likely to increase the costs of production, it does however offset the economic pressures experienced by companies operating in competitive environments by compelling all employers to invest in occupational health and safety. The situation of firms that compete in the global market is however, more complex since global standards do not exist.

Risk assessment

The need to address risks proactively increased interest in risk assessment methods as means of assessing the seriousness of OHS risks and establishing priorities. Quantitative risk assessment tools applied by experts dominated risk assessment efforts initially. This approach enabled the magnitude of a risk to be expressed in numerical terms by extrapolating from scientific data. However the limitations quantitative risk assessments became apparent as lay interest groups and the general public came to understand the nature of the assumptions built into the methodology (Carnegie Commission1993)p78, (Burke1996) p94.

A view frequently expressed by industrialists for example is that risk assessment systematically overestimates risks by basing exposures on extreme circumstances unlikely to be encountered in practice. An oft-quoted example from the USA involves the Environmental Protection Agency (EPA). It is said that the EPA either pretends that people are pressed up against a fence surrounding an industrial facility for 24 hours a day for a total 70 years, or assesses human responses on the basis of the reactions of sensitive rodents exposed to huge doses in the laboratory (Carnegie Commission1993)p78, (Cothern1996)p64.

On the other hand, public interest and environmental groups argue equally cogently that quantitative risk assessment underestimates risk by ignoring complicating but relevant factors such as synergies between different the substances to which people may be exposed simultaneously, variations in human susceptibility to disease and illness, and the full range of possible exposure routes (Carnegie Commission1993)p78.

Other factors that influence susceptibility include the health and nutritional status of the exposed population.

Inconclusive science underlies differences over the severity of risk and debates about the appropriateness of a specific exposure limit. Ultimately decisions come down to a choice about whether it is better to err on the side of caution or not. The need to resolve such differences, essentially arising out of competing interests, gives rise to ethical issues. For this reason the application of ethics to controversies involving science and environmental decision is a growing field and risk assessors are increasingly encouraged to become conversant with ethical discourses (Cothern1996)p47.

As Richard Cothern states in a book that he edited on environmental risk decision making: "There is a need to involve ethical discourse in science and environmental risk decision making for the following reasons: it will assist in resolving potential conflicts, those making decisions need to know the value judgements imbedded in the information available, most scientific information contains uncertainty and may easily be thwarted by different value judgements and these are often the normative principles that are actually used in decisions."

In the final instance, risk assessment remains an important tool in evaluating risk and making decision about priorities. It is however only useful when its limitations are properly understood and the assumptions and values implicit in risk assessment process are made explicit. Once these are known, the political and economic factors extrinsic to the process may prove to be more decisive or important than the scientific data and are likely to involve ethical considerations.

OHS management systems

The systems approach to OHS stems from the idea that that within companies, junior managers, supervisors and workers on the shop floor take their cue from the top. In the words of the influential Roben's Committee (Committee of Inquiry1972)p15. "The boardroom has the influence, power and resources to take the initiative and set the pattern." Reduction in the incidence of occupational injury and disease is sought by adopting a systematic approach to prevention which involves the identification of hazards, the planning and monitoring of preventive measures, and integrating health and safety related criteria into routine work and decision-making at all levels of the organisation. There has however been much debate over what OHS management systems entail in practice and whether they are of real value.

Nevertheless, recent research suggests that occupational, health and safety management systems can reduce the incidence of injury and disease (Monk and Cropley1997)p2 Executive Summary. An investigation into the relationship between health and safety performance and OHS management systems in the building and construction industry in Australia, suggests that effective systems:

- clearly define and assign OHS responsibilities
- involve senior managers
- involve supervisors
- engage worker OHS representatives broadly and actively
- actively engage health and safety committees
- approach hazard identification and risk assessment in a planned way
- give priority to the control of hazards at source
- involve comprehensive workplace inspections and incident investigation
- include a systematic approach to purchasing

Reconciliation of competing goals

The production of manufactured goods involves human and social costs of which occupational injury and disease is a part. Economic and market forces influence level of work-related injury and disease since they have a strong bearing on the decisions and actions taken within companies. Competition in the market place results in constant pressure to reduce the costs of production while the implementation of occupational health and safety measures tend to have the opposite effect. Even though measures taken to mitigate occupational health and safety hazards may have a beneficial effect on productivity and profitability in the long term, markets typically impose short-term horizons. Consequently, experience

dating from the industrial revolution onwards suggests that socially acceptable levels of work-related injury and disease cannot be achieved in unregulated markets (Ashford1976)p310-311.

Since the 1970's policy makers and regulators have relied on either of two mechanisms to create more consistency between economic goals and occupational health and safety, namely the reasonable practicable test and cost-benefit analysis. In theory, these measures create an economic incentive to invest in OHS since employers who fail to comply risk their right to engage in production.

The reasonably practical test imposes an obligation on companies to adopt the "best method" for control or mitigating a hazard, subject to the following conditions:

- The severity and scope of the hazard.
- The state of knowledge of the hazard and of the means to eliminate or mitigate it.
- The availability and suitability of the means to remove or mitigate the hazard.
- The cost of removing the hazard.

In order to meet the requirements of this test, companies are required to identify and assess risks and consider the various options for control or mitigation. Outcomes of the process are not fixed and are open to negotiation.

Cost-benefit analysis was first applied to OHS in the USA (Committee of Inquiry1972)p15-16. Pioneered by Heinrich in the 1930's (Heinrich1931) it was first used to assess the total cost of occupational injuries to firms and to motivate for the introduction of controls on the basis of financial and incident data. As the technique developed it was applied to a wider range of situations which included evaluation the costs and benefits of specific regulations. For example, the immediate economic costs of initiatives to address OHS hazards that have established market values can be calculated and contrasted against the of costs of medical treatment, compensation benefits and other family support. In addition, by making various assumptions, it is possible to take into account social costs such as reduced quality of life, pain and suffering etc which do not have a market value but which can be counted as a social or human cost (Ashford1976)p314.

Both the reasonably practicable test and the cost-benefit analysis approach have been subject to severe criticism. The reasonably practicable test was criticised on the basis that it is so broadly defined and open to interpretation that it provides insufficient guidance to employers (Benjamin and Greef1997)p63. Similarly, cost-benefit analysis promises objective and scientific answers but yields widely varying results. Value-laden assumptions are intrinsic to the technique and the results obtained depend on the assumptions made.

In recent years the reasonable practicable test have been supplemented by guidelines which explain how the risk assessment is to be done and how companies are to benchmark themselves against the OHS leaders in their sector. In the case of cost-benefit analysis, it is now usual for stakeholders to demand that the assumptions built into calculations be made explicit. While these augmentations do not eliminate subjectivity and value-based assumptions, they do standardise risk assessment methodologies, fix value judgements and establish a basis for challenging such judgements.

Participatory Processes

From the 1970's onwards the principle that workers and their representatives should be directly involved in OHS related decision-making process, gradually gained acceptance (Gunningham1985)p43. Both pragmatism and ethical considerations propelled this shift in attitude. Firstly, the experiential knowledge of workers proved to be crucial to risk control efforts. Secondly, evidence emerged of the important role played by workers' organisations in the enforcement of rights and standards. Finally, the practice of imposing risks on workers without their knowledge and without taking account of their concerns was challenged on ethical grounds. As a result, participatory processes are commonplace today and complement quantitative methods of assessing OHS risks. OHS law typically makes reference to bipartite participatory processes involving managers and trade unions (and/or workers) at the level of the workplace and tripartite participatory processes involving representatives of business, labour and government at the national level. Where OHS issues have an impact on the community, representation is usually catered for in environmental legislation which makes provision for the involvement of both communities and non-governmental organisations.

Participatory processes profoundly affect the way in which concerns are framed and decisions are made about control measures. (Catron1996)p337-382, (Marri and Stanzani1985)p61-6, (Wintersberger1985)p20-21, (Wartenberg and Chess1997)p270-71. More detailed information about the nature of a hazard is likely to emerge, a broader spectrum of concerns are more likely to be considered and alternative processes or materials are more likely to be explored.

Jasanoff has done interesting work on the way in which different risk assessment processes, ranging from those that rely on expert opinion mainly to those which involve stakeholders, inform public policy and decision making. In her paper titled " The political science of risk perception"(Jasanoff1998), Jasanoff describes three models of risk perception which she labels realist, constructivist and discursive. They inform different approaches to risk related public policy. Although the paper is concerned with environmental risks, her analysis is equally valid for occupational health and safety risks.

In Jasanoff's scheme, the realist model relies on experts to provide unbiased and authoritative knowledge about risks. Public policies founded on this model emphasise the role of competent bureaucracies in which experts are insulated from political pressures and are engaged in the mapping, measurement and control of risks. Improvements are secured by correcting faulty and irrational lay perceptions, and by disseminating authoritative information (Jasanoff1998)p94-95.
In contrast, the starting point of the constructivist model is the social construction of risk in all settings, including that traditionally regarded as expert such the confines of the research laboratory. Drawing on work concerned with the sociology of science, knowledge about risk, like all science, is shaped by history, culture and politics. This model postulates that authoritative knowledge can best be achieved through processes of negotiation and conflict resolution. It is accepted that both expert and lay risk perceptions are likely to contain social judgements. Policy improvements are thus sought by allowing all affected parties to participate in the "framing, analysis and resolution" of problems (Jasanoff1998)p94-96. Stakeholders enter the process interpreting information in terms of their own experiences and interests and seek binding resolution through interaction and compromise.
In the discursive model, risk is also socially constructed but emphasises the way in which professional language and practices e.g. quantitative risk assessment and cost-benefit analysis shape public perceptions. Policy improvements are achieved through critique of the dominant discourse that could also entail social resistance (Jasanoff1998)p94.

Applying Jasonoff's scheme to occupational health and safety, it can be argued that the realist model has been has been superseded by the constructivist model. Questions about the influence of power, the organisation of corporations, vested interests and incorporation of value judgements in ostensibly objective scientific endeavours eroded the realist position over time. While this position gives the appearance objectivity and neutrality, it contains subjective views and favours the status quo.

- Large firms, it has been argued are treated with undue circumspection because their economic interests were seen to coincide with the 'national economic interest"(Dawson, Willman et al.1988)p241.
- Another argument is that the OHS agenda is determined by decisions that do not invite public scrutiny, made routinely in the private sector. Consequently regulatory agencies and research institutes merely react to corporate initiatives involving investments, technology and the organisation of work (Noble1997)p64.
- Reliance on quantitative techniques such as cost-benefit analysis and quantitative risk assessment tend to maintain the status quo (Smith, Kelsey et al.1997)p246.
- Regulatory agencies tended to become captured by the companies they were empowered to regulate (Dawson, Willman et al.1988)p241, (Carson1985)p66.
- Value-judgements were intrinsic to decisions about the permissibility of certain risks.
- The practice of devising standards without seeking information about work practices and the effects of interactions systemic to production process was shown to be inappropriate (Ramirez and Leemans1985)p356-361.

Worker participation in OHS decision-making at workplace and national level was advocated on the basis that it would counteract several of the tendencies described above. Workers' intimate knowledge of both

the work activity and the work process would modify and improve strategies for the identification, anticipation, reduction and control of OHS risks (Wintersberger1985)p20-21. The involvement of trade unions and workers in decisions over technologies and work organisation that have OHS impact, would insert occupational health and safety onto the agenda of managers in a meaningful way (Carson1985)p76. These arguments translated into an obligation placed on employers to make information available to workers and others and to consult with them about the introduction and operation of processes that could affect their health and safety.

At the same time, legal rights to information, to representation and to refuse dangerous work were afforded to workers in order to establish a basis for meaningful participation. However, as Jasanoff's well-reasoned analysis of the chemical disaster in Bhopal, India suggests, even when such rights exist, the desired results may not necessarily follow. Workers at the Union Carbide plant in Bhopal did not have the right information. The disaster which resulted in the deaths of more than 2000 people and the injury or disablement of 200 000 more (Jasonoff1988)p1113. See footnote for further details [4] produced new calls for this right. Jasanoff argues that even if the workers were able to exercise the right to know, better decision-making, better management of risks and in the last instance, better containment of the catastrophe may not have resulted.

The right to know

According to Jasanoff (Jasonoff1988)p1113-1123 the utility of the right to know is limited under the following circumstances:

- The full implications of information about OHS risks are not appreciated.
- All the groups potentially exposed to OHS hazards have not been identified and do not have access to information. Members of the communities surrounding industrial plants are amongst those potentially exposed and are typically excluded from the information loop.
- Those responsible for regulating, preventing and responding to emergencies and/ or disasters do not have access to relevant information.
- Knowledge of OHS hazards does not coincide with power to act preventively.
- Power to act preventively is dissipated. The complexity of organisations, hierarchical structures in which separate those responsible for risk assessment from decision-makers, and barriers between separate organisations and geopolitical entities, all contribute to the dispersion of the power to act.
- Trade secrecy claims take precedence over health and safety considerations.
- The most significant interventions can only be made at the design or pre-production stage.

[4] Analyses by Jasanoff and others of the Bhopal disaster revealed that workers at the plant were aware of malfunctions and technical problems but did not appreciate their seriousness. Similarly senior executives of the company involved failed to appreciate the significance of the information to which they had access. Executives were aware of pesticide production methods that did not involve MIC (the chemical released from the plant) and had access to documentation produced in the early 1970s which suggested that the storage of large amounts of MIC in Bhopal was undesirable. The surrounding community was unaware of the dangers which plant presented to the community. Those who responded to the disaster were unprepared for the scale of the emergency, did not know what compound had been released and how to treat exposed individuals. No one in or outside of the company was apparently in a position to take ultimate responsibility for assessing risks or ensuring safety. Finally, although the company possessed the best information on MIC's toxicity, this information was treated a trade secret and not made available generally
Jasonoff, S. (1988). "The Bhopal disaster and the right to know." Sociology, Science and Medicine **27**(10): 1113-1123.
Jasanoff, S., Ed. (1994). Learning from disaster. Risk management after Bhophal. Philadelphia, USA, University of Pennsylvania Press.
Following the Bhopal disaster, the Indian government introduced compulsory disclosure of information by the occupiers of industrial sites to the chief inspector, the local authority, the workers and the general public
Durvasula, (1988). The development of occupational health services in India: issues of inequity and problems of regulation. Boston, Harvard School of Public Health, Takemi Program in International Health..

Right to participate

A case analogous to that of the right to know can be made for the right to participate. This right too, is of limited utility, when:

- Stakeholders are not well organised.
- Key stakeholders are excluded from the process.
- Information presented in a highly technical format prevents stakeholders from understanding the fundamental issues or choices.
- Interests that typically centre on economic, political and quality of life issues, are difficult to reconcile.
- Participants with vested interests are more powerful than others and use their power to determine the outcome of the processes.

Difficulties associated with the application of the right to know and the right to participate warrant serious attention since these rights are central to the success of the new model for OHS policy and regulation. Their effectiveness is contingent on mechanisms that support collective organisation, facilitate the identification and interpretation of critical data, improve access to such data, place certain data in the public domain as a matter course and that increase corporate accountability.

Management of the policy making process itself is also crucial. Open policy-making processes give rise to the problem of reconciling competing interests. Policy must be crafted having considered different perspectives, scientific findings and experiential knowledge. South Africa's experience, stemming from the negotiations in which the country's constitution was drafted, suggests that establishing explicit criteria at the outset is beneficial. Criteria appropriate to OHS decisions could include congruity with stated values, consistency with international developments, technical feasibility, anticipation of future constraints, and acceptability to the public.

CURRENT ISSUES AND RECENT DEVELOPMENTS

Harmonisation of OHS standards across national boundaries

> *"The failure of any nation to adopt humane conditions of labour is an obstacle in the way of other nations which desire to improve the conditions of labour in their own countries".*
>
> *ILO Constitution adopted in 1919*

The notion of international health and safety standards flows from the sentiments expressed in the ILO constitution but serious efforts to bring the idea to fruition have not materialised. Vested interests in maintaining market dominance, and fear that such standards will be used as an indirect form of protectionism by developed countries, are the main stumbling blocks.

Specific factors differ from situation to situation. For example, some companies resist the adoption of international standards because it is in their interest to do so. In the USA, the Toxic Substances Control Act gives legal expression to this stance. The act imposes pre-market testing of products distributed within the USA but specifically exempts products to be sold abroad, many of which are destined for industrial use. On the other hand, in a number of competitive industries, firms located in developing countries operate under less demanding conditions – standards may be lower or poorly enforced. Stringent international standards could thus affect the competitiveness of such firms and resistance to such standards is particularly high when the changes required involve significant investments, modification of plant or the re-organisation of work. Finally, national governments may resist the adoption of strict standards because of the repercussions they may have for the national economy. New standards could precipitate the re-organisation of whole industries by excluding non-complaint firms and forcing marginal operations out of business.

The most ambitious attempt to date to harmonise health and safety standards across national boundaries is taking place in Europe. Harmonisation is seen as important for several reasons:

- It will assist economic integration in that businesses operating within the EU will incur similar OHS related costs thereby reducing distortions in competition based on disparities in OHS standards.

- Reduction in the 10 million injuries and the 8 000 deaths amongst the 138 million strong European workforce will reduce the social cost of occupational disease and injury and improve the quality of life of the whole community.
- Prioritisation of OHS with result in more efficient work practices which would have the effect of increasing productivity, lowering operational costs and improving industrial relations (ILO1997) v1 c23.

Notwithstanding the paucity of agreements on international standards, OHS standards are relevant to the global market and affect trade. Goods may be banned on the basis that they represent a hazard to the public or to the environment. Goods may be prevented from entering certain markets because of the conditions including OHS-related conditions, under which they are manufactured. The packaging and labelling of chemical substances in particular, is important. As a result agencies such as the HSC in Britain and the National Health and Safety Commission (NHSC) in Australia are responsible assessing developments in the international arena. The HSC is particularly active in the European Union and the NHSC monitors international data and research for information about emerging OHS problems, major trends, gaps and issues (HSC1998 ; NOHSC1999). In South Africa the necessity to monitor developments is amply demonstrated by the ongoing debacle over asbestos. Asbestos continues to be mined in the country albeit on a much smaller scale than in the past. When Cape PLC once the world largest producer withdraw from the country in 1979, the livelihood of mining community in a remote part of the country was destroyed overnight. Mines and dumps were not rehabilitated and entire communities in the Cape and Northern provinces continued to be exposed to asbestos fibres. The full extent of asbestos-related disease is only now appreciated (Soggot1998 ; White1998)[5]. It is clear that the South African authorities did not anticipate the ban of the importation of blue and brown asbestos into Britain in 1972 and 1980 respectively; and restrictions on its use within the USA, Europe and Australia. Furthermore, continued exposure of South African citizens did not invoke a reaction from the previous government. As recently as November 1998, a national asbestosis summit was convened to discuss the problem and work towards acceptable solutions (Parliament1998). Other minerals that South Africa produces could suffer a similar fate, as there are major concerns about metals in the environment in Europe and North America at present. Anxiety about the environmental fate of the manganese-rich organic compound, MMT, used to improve the octane rating of unleaded fuels is an example of one such concern. Since South Africa remains heavily dependent mining and mineral processing for employment and export, it is imperative that policy makers become conversant with the OHS issues in other jurisdictions particularly those related to minerals and metals.

Convergence between OHS and environmental issues

Disasters such as that at Bhopal in India and developments at the Thor Chemicals plant in South Africa [6], have highlighted the connection between occupational health and safety and environmental issues. In

[5] At Penge in Mpulanga brown asbestos was mined and milled. A doctor who inspected the site in 1965 found young children working inside shipping bags trampling down the mineral while is cascaded over them. A burly supervisor holding a whip kept watch over them. In Prieska in the Northern Cape blue asbestos was mined and milled. In Prieska mill dust levels of 800 fibres/ml were recorded in 1948. The mills a Prieska and Koegas also in the Northern Cape operated dry and spewed dust over hundreds of square kilometres and over the homes of local residents ICEM, (1997). Apartheid's Industrial Legacy. **1/1997:** 1-2..

[6] Thor Chemicals is a British-owned company that operated in Cato Ridge, KwaZulu-Natal, South Africa. The company was processing mercury waste. The Chemical Workers' Union in South Africa organised Thor in 1991 and uncovered a spate of occupational poisonings early in 1992. Following the death of two workers and the disablement of another as a result of mercury poisoning a Commission of Inquiry was initiated in South Africa. Widespread exposure of the workforce to mercury was uncovered as well as the pollution of local rivers. In a separate legal battle in the British courts, twenty workers were eventually awarded R9.4m in damages and costs. The commission chairman, Professor Dennis Davies found that a number of government departments viz. Labour, Health, Environment and Tourism, and Water Affairs and Forestry, at local and national level, were unable to control the company which in turn exploited the situation. "What is clear to the commission is the level of government culpability"ICEM, (1997). Apartheid's Industrial Legacy. **1/1997:** 1-2.

particular these disasters have raised questions about the wisdom of independently developing OHS and environmental policy, and addressing problems which have both and OHS an environmental dimension in a fragmented way, by focussing exclusively on either the workplace or the environment external to the workplace. Ashford quotes another instructive example of the relationship between OHS and environmental concerns. In the USA, the environmentalists succeeded in replacing the pesticide DDT with parathion. However environmental and workplace concerns were not considered simultaneously. While DDT endangers wildlife and contaminates food, it is less harmful to the workers who handle and apply the pesticide (Ashford1976)p7.

In the past environmental policies were largely reactive and work of environmentalists focussed on the rehabilitation of land and the containment of wastes. The perimeter of industrial premises effectively represented the boundary between OHS concerns and environmental and public health concerns. However, as the value of addressing problems at source become more apparent, environmental policy logically extended into the workplace where the sources of industrial pollutants are located. At the same time, other factors extended the OHS domain beyond the factory perimeter. Occupational hygiene which is concerned with the assessment and control of health hazards, ultimately deals with the management of industrial emissions, pollutants and waste. The legal requirement that firms concern themselves with the impact of their activities on the health and safety of the general public likely to be affected takes OHS into the field of both environmental management and public health.

Fortunately it is now widely recognised that a number of environmental and OHS problems have a common source namely a hazard or product developed within the work environment. Furthermore it is commonly accepted that the knowledge, training and processes critical to the resolution of OHS related problems are similar to those employed by environmental health specialists. Those who advocate that strong links between environmental and OHS policy be developed argue that taking a broader view would have several advantages. It would result in (i) better decisions about exposure control; (ii) greater consistency in occupational and environmental standards, and (iii) the development of more effective controls of hazards which affect both the workforce and the community.

How and to what extent OHS policy and environmental policy should be integrated is however a moot point. There are advantages to maintaining a unique orientation, for OHS on the one hand and the environment on the other. Yet the proliferation of large-scale industries, and the location of industries close to communities and within environmentally sensitive areas require that an integrated approach be developed. Effective regulatory and policy models still have to emerge at national level. However, within many firms and within the trade union movement an integrated approach already has been adopted. This is possible because these organisations are concerned with a smaller range of problems and interests.

It should be noted that current debates about overarching policy are not limited to OHS and the environmental policy. In the USA for example, concerns have recently emerged about lack of co-ordination between the agencies concerned with OHS, the environment, food and drug safety, and consumer protection. Proposals on how the activities of these agencies could be better integrated and co-ordinated have been made. In 1993, the Carnegie Commission investigated the matter and recommended that the executive office of the US president expand its capacity to formulate “broad environmental and risk related policies” and integrate these policies with other national goals (Carnegie Commission1993).
In the UK, there are similar concerns involving the same spectrum of issues discussed in the Carnegie Commission report. The absence of overall policy for the assessment of risks and risk management is seen as a hindrance to the UK's effectiveness in the negotiating with the European Union and addressing issues related to international standards (ILGRA1998)chap.2. Since 1996 networking and co-ordination of policies across departments and agencies has accelerated in Britain. Issues under consideration include developing consistent methodologies and guidelines for risk management and risk assessment, developing a long term research strategy, and taking account of public values and preference.

Gosling, M., (1997, May 14). Thor slammed for toxic waste imports it couldn't process, The Cape Times. www.ban.org/ban_news/thor_slammed.html. **1999**..

DIFFERENCES BETWEEN COUNTRIES

While it is clear that changes to OHS policy and regulation in many countries follow a similar pattern, it is important to acknowledge that there are significant differences in the way in which policy and law have been interpreted and implemented. Similar formulations of policy and law have produced different results in different places. These appear to be related to differences in political, social, and economic conditions and are subject to variation over time. For example, public attitudes to health and safety have an effect on the authority given to institutions responsible for OHS, the way in which these institutions operate and the extent to which the goals of these institutions are integrated with other social goals. Also, the level of co-operation between employers, workers and government appears to reflect the degree of social solidarity that exists between different groups in society.

Higher social solidarity

Consensus-seeking mechanisms tend to be adopted in countries in which there is a high degree of social solidarity such as those within the European Union particularly in the Scandinavian region. Other countries that do not have a long history of social democracy but in which consensus seeking mechanisms are nevertheless embedded in OHS policy and regulation are Britain, Australia and New Zealand. Lead organisations in these countries have extensive obligations to consult interested parties before developing and improving standards. The advantages of this approach is that consultation enhances the likelihood that the regulations adopted are more likely to have the support of important sectors of industry and as well as employer and worker organisations. Drawbacks of this approach are that progress in securing agreements is slow and that stakeholders with vested interests can act to reduce the stringency and specificity of some regulations (Dawson, Willman et al.1988)p205.

Lower social solidarity

The USA is widely regarded as a country in which social solidarity is low. Commitment to social welfare while not absent remains embryonic (Levy and Wegmen1995)p46 and corporatist forms of interest representation viz. organisations representing labour and business en-bloc, are absent (Noble1997)p61. In contrast to the situation in Europe and elsewhere in which regulations are developed in consultation with stakeholders, in the USA proposals by the lead organisation, OHSA, are open to challenge in the federal and state courts. Mechanisms to secure the co-operation between key players are weak. This approach, combative and legalistic, not only hampers the promulgation of statutes but also does little to promote agreement between employers, workers and regulators. Furthermore, since delays favour parties that are satisfied with the status quo, complicated arguments that prolong court proceedings are commonplace. Judges are compelled to seek new information or consider novel perspectives. Finally since employers and others are not drawn into the policy making process at the outset, the possibility of influencing them and obtaining their co-operation is even less promising when the government itself is not in favour of external regulation (Dawson, Willman et al.1988)p185 and 205, (Kelman1981)p221. The USA's experience thus suggests that when the mechanisms available to the national agency for improving standards are essentially adversarial, the support of the governing political party is critical if progress is to be made (Dawson, Willman et al.1988)p185.

The historical importance of developments in the USA and the UK

Developments in the UK and the USA are important because they have influenced thinking throughout the industrialised world and have come to represent the consensus and adversarial poles of the new approach to OHS policy and regulation.

The promulgation of the Health and Safety at Work Act of 1974 in Britain implemented most of the proposals made by the Robens' committee that conducted a wide-ranging inquiry into occupational safety and health in Britain from mid-1970 to mid-1972. The fundamental assumption made by the Robens' committee was that employers and workers have a natural identity of interest regarding occupational health and safety. The committee downplayed empirical evidence to the contrary and the problem of balancing competing interests within the workplace was never really considered. Neglect of OHS by managers was ascribed to a failure in education and training. Once corrected, the importance of high OHS standards would be properly appreciated and the promotion of OHS would be integrated into their agendas.

Consequently the Robens' committee proposals centred on self-regulation. Not only was OHS an area of common interest but also enlightened managers and owners of industry would at their own behest, consult with workers and develop systems to manage OHS hazards effectively. The Roben's committee thus concluded that in the workplace, worker organisations had little role to play in ensuring that OHS issues are addressed on an ongoing and consistent basis. In addition to self-regulation and a limited role for trade unions, the committee favoured persuasion over sanctions for recalcitrant employers. The system established in law two years later conformed to this perspective in two respects, self-regulation and persuasion despite opposition thereto (Ashford1976)p513. A study (Dawson, Willman et al.1988) published 14 years later, explores the limits of self-regulation. It suggested that stronger mechanisms were required to enhance "the willingness and capacity of employers" to prioritise OHS in a substantive way. It also recommended that the HSC make targeted efforts to take account of the effects of specific conditions such as economic recession, sub-contracting and industrial restructuring, that are detrimental to OHS performance (Dawson, Willman et al.1988)p279-281. Finally, the study emphasised the importance visible enforcement and tougher sanctions for companies that flagrantly disregard the law.

In the USA, the centrality of self-interest in debates over OHS policy and regulation stands in stark contrast to the emphasis which the Roben's committee placed on co-operation and an identity of interests. The system as a whole operates on a pluralist and combative basis, with the federal and state courts playing an arbitrating role (Kelman1981)c7. Before a standard can be established, OSHA alone bears the responsibility of proving the hazardous nature of a substance and the technological feasibility of the controls proposed. When differences in interest arise, hegemony rather than accommodation is sought. The legal system kicks in and interested parties are given the opportunity to put forward their best arguments to a judge. As a result of litigation the promulgation of standards has been painstakingly slow in the USA.
Nevertheless, proponents of the system argue that it is uniquely open to "citizen participation in policy-making", unlike the more formalised systems in Europe which rely on the organisation of industry and labour (Levy and Wegmen1995)p46. This argument has merit particularly as the number of workers represented by trade unions is shrinking in Europe and corporatist institutions are consequently increasingly less representative. Yet even in the USA, trade unions continue to play an important role in the exercise of individual worker rights and in the enforcement OHS standards (Weil1996)p247.

Another issue which USA experience highlights is the role of the OHS professional in the development of policy and regulation. Growth in the professions associated with OHS has been unprecedented in the US. Large numbers of professionals have been trained and private research organisations exist alongside public institutions. Together with the adoption of the Occupational Health and Safety Act which created a role for these professionals in industry, it possible that centrality of scientific and technical argument to standard setting, has contributed to the development of the country's research and professional capacity. Institutions representing OHS professionals are well established and have become a political force in their own right. In the Reagan era, it is possible that these institutions were so powerful that they were able to contain initiatives to dismantle public institutions.

Taken in overview, historical developments in the UK and the USA suggest that:

- OHS policy and law should take into account competing interests within the workplace and the wider environment;
- consensus seeking mechanisms play an important role in developing support for regulations and creating the basis for co-operation between parties;
- collective agents i.e. organisations such as trade unions, play an important role in the enforcement of standards and the exercise of rights.
- The development of the OHS professions is important from both a scientific and political perspective.
- Social norms and values have a strong influence on OHS policy and law and should be considered when designing OHS policy and law. In Europe social solidarity creates a basis for rationalising competing claims and interests and while in the USA the courts exercise ultimate authority. The organisation of the social partners is characteristic of Europe while collective values are eschewed in favour of individual rights in the USA.

IMPACT OF THE NEW MODEL - HAS IT HAD A POSITIVE EFFECT?

On the basis of empirical evidence alone, it is difficult to assess how effective the national policy and framework legislation model for OHS has been in reducing the incidence of occupational injury and disease (Dawson, Willman et al.1988)p42. Official statistics are not necessarily reliable. Reporting rates vary from sector to sector. Some sectors particularly those involving contract workers and short-term or seasonal work are likely to be under-represented and while others involving long term and formal employment within large concerns, could be over-represented. Even if the injury and occupational database were complete, the control of other independent variables that appear to affect incidence rates, would remain a problem. Variables that are likely to affect the incidence rate include technological change, mechanisation, the level of unionisation, changes in the economic environment, changes in the pace of work, wage levels, the effectiveness of the enforcement agency and management attitudes (Dawson, Willman et al.1988)p42, (Weil1991)p20, (Weil1996)p247. In addition, the impact of factors such as consultative and participatory arrangements has not been widely researched although the case studies available suggest that these arrangements tend to have an ameliorative effect (Weil1991)p20, (Monk and Cropley1997)p2.

A qualitative assessment of the impact of the measures introduced since the beginning of the 1970's is nevertheless possible. Weighing up the measures and the experience documented in case studies against the basic conflicts which occupational health and safety legislation seeks to resolve in the first place, is one way of doing such an assessment. Do the changes in policy and regulation facilitate the resolution of systemic conflicts, lead to solutions that are more equitable and change the operating philosophy of firms or do they merely guarantee due process and reduce arbitrary behaviour? Nick Ashford's scheme of conflicts set out in his seminal work of 1976, and titled "Crisis in the Workplace" provides a convenient reference framework for seeking an answer to this question.

Inherent conflicts and changes in policy and regulation

Ashford (Ashford1976)p6-7 argues that OHS health and safety policy and regulation should ultimately address conflicts which are rooted in societal values and which arise from[7]:

- Incomplete knowledge
- Differences in self-interest
- Differences over what is just and fair
- The compartmentalisation of institutions, disciplines and policy such as environmental, health, economic and OHS policy.

Measures introduced into OHS policy and regulation since the 1970's include:

- The right to know
- The right to participate
- The obligation to actively manage OHS hazards
- The development of national policy
- The establishment by law of institutions to develop and oversee the implementation of national policy

Knowledge

Conflicts of over a lack of knowledge arise because the effects of occupational health and safety risks are not completely known.

Within the workplace the current state of knowledge about a particular hazard may not be appreciated, or knowledge is used to the political advantage of one party - most often the better resourced.

[7] In Ashford's Ashford, N. (1976). Crisis in the Workplace: Occupational Disease and Injury. A report to the Ford Foundation. Cambridge, USA, MIT Press. study, conflicts are classified into five types, viz.

- conflicts associated with differences in self-interest
- conflicts related to a lack of knowledge
- conflicts due to differences over what is just and fair
- conflicts due to the "non-connectedness" of institutions and agencies
- conflicts due to approaching OHS related problems from a unidisciplinary perspective.

For the purposes of the analysis presented in this paper, I have combined the last two categories into one, which I have labelled "compartmentalisation."

Outside of the workplace, inconclusive data confound decisions about standards and ultimately judgements turn on perceptions of what is just and fair in public policy. For example adopting cautionary approach may be advisable from perspective of worker health but the cost of implementing protective measures could undermine the viability of a company. When the company concerned is of importance to the local or national economy, the decision-making process is even further complicated.

Incomplete knowledge also has a bearing on the imposition of sanctions and the establishment of liability. The basis for justification becomes questionable. Under these circumstances the burden of proof required by law takes precedence over the burden of proof required in science to support a particular thesis. Since the difference between the two is open to interpretation and is not well understood, controversy may be unavoidable.

In theory, the creation of institutions that generate knowledge accessible to stakeholders and decision-makers and the right to information should reduce conflicts over knowledge. The data required becomes available, interested parties are able to gain access these data and the chances of reaching decisions which are acceptable to all, are increased. Practical problems however stand in the way of achieving the ideal. Meaningful application of research and the right to know are contingent on the appreciation and mitigation of practical limitations associated with research capacity, the dissemination of research, the appreciation of research findings and the synthesis of the information available.

- It is impossible to research of every OHS hazard systematically or to anticipate the all the OHS risks likely to be associated with a particular product or chemical before it has been put into use. For this reason the prioritisation of research is important if the available resources are to be used efficiently and priority is to be given to investigation the hazards which the most serious risks.
- The assessment of OHS risks however involves value judgements and assumptions that may skew reasoning in a particular direction. Value judgements may be reflected in the methodology used, in the factors considered and excluded and in the weighting of particular risks relative to others. Unless the value judgements implicit to risk assessment techniques are made explicit, the potential for fairly resolving issues is reduced.
- Although information may be generally available, it may not be in the hands of decision-makers or interested parties at the right time or in an understandable form. Depending on the circumstance, additional mechanisms may be required that induce parties to seek the most current information, encourage institutions to consider the dissemination and application of research and which prompt decision-makers acquire information at critical times such as at planning and design phase of industrial projects.
- Since several research initiatives each involving different disciplines may deal with different aspects of the same problem, it is often difficult to obtain a holistic perspective of both the problem and the interests at stake. Unless specific efforts are made to synthesise the available information and to encourage co-operation between researchers and institutions, the crucial concerns may be overlooked when decisions are made or when policy is formulated.

Self- interest

Differences in self-interest come into play at a number of levels. As the foregoing discussion illustrates what may be in the interest of workers may not be in the interests of the owners of an enterprise or of the population at large. It is important to note that short-term needs tend to shape the self-interests in significant ways. For example, the managers of a company may defer the implementation of measures to eliminate or reduce OHS risks in order to maintain short-term profitability even though the long-term benefits may be considerable. Similarly, trade unions involved in negotiations may drop demands over OHS in order reach settlement on other issues such as wages and job security. Finally even governments could delay decisions about standards in order to avoid economic disruption.

Perceived self-interests are also an issue. Experience in the USA indicates that the owners of industry, fearing the economic consequences of regulation, oppose OHS legislation on principle even when there appears to be no cause for concern (Ashford1976)p311.

Legal and policy mechanisms that create consistency between self-interest and an interest in improving OHS reduce the potential for conflicts of interest. From this perspective, the general duty of care placed on employers, manufacturers and suppliers to industry, the reasonable practicable test and the need to assess risks have the potential to make OHS a criteria for staying in business. They also create an incentive for

employers and other to become familiar with OHS related knowledge and to utilise it in the design of safe systems of work and products.

Several factors limit the effectiveness of such mechanisms, viz. the resources available to a company, the magnitude of penalties for breaches of the law and the conditions under which other companies in the market operate. The owners of companies may not have sufficient resources to keep pace with current research and technology. The cost of implementing protective measures may exceed the costs of the penalties incurred for breaching the law by far. Finally, competition between companies may be distorted if all are not compelled to make similar investments in OHS.
Growth in the global market in particular has focused attention on differences between OHS, labour and environmental standards between countries engaged in global trade. The challenge for governments today is to reach agreement as to how to address this issue in terms of both bilateral and multi-lateral trade. In the absence of agreement over trade rules, an individual company or country may gain at the expense of another by producing goods and bringing them to the market without attending to OHS, public health and environmental concerns. Since adjustment costs can be substantial, these costs have to be factored into deliberations. Furthermore the debate over global standards very politicised since the possibility that such standards will be abused for protectionist purposes is particularly threatening to developing countries. Developed countries have the advantage of better infrastructure and technical skills while developing countries tend to fall back on lower wage levels and lower labour standards to attract foreign investment and secure their competitive edge (Kooijmans and Sparreboom1998)p51-53. Ironically, empirical evidence particularly from Africa suggests that the creation of export processing zones in which labour standards are relaxed, do not necessarily lead to an increase in foreign investment. On the contrary the key determinants of the flow of foreign investment are high levels of skill amongst the workforce, high level of productivity, local market conditions and a stable economic environment (Hayter1998)p29. The debate on global standards however rages on.

Notwithstanding the lack of agreement over global standards between national governments, public awareness of poor working conditions and environmentally insensitive production methods has grown. Protests and boycotts of goods produced under poor conditions are not uncommon and investment funds that deal only with companies that have good environmental and employment standards are now commonplace. Decision-makers cannot afford to ignore growing public concerns over environmental health and labour standards and should note that public pressure has played a decisive role debates over nuclear energy and in the management of toxic waste (Carnegie Commission1993)p15, (Freudenberg1996)p20, (Gerrard1994)p73 and 97-99.

Justice and fairness
Differences over what is just and fair arises because public policy designed to protect one section of the population, usually involves costs and risks to others. Competing claims may concern the health and safety of workers versus the economic interests of owners, shareholders and/or governments. The interests of present versus future generations may also be at issue. Ethical considerations and moral issues are involved as well as decisions about short and long term priorities.
Drawing on an analysis on the issue of fairness set out by Gerrard in his book on toxic and nuclear waste siting (Gerrard1994)p81, concerns over justice and fairness have two aspects, procedural and distributive. Justice and fairness is not served by allocating OHS risks unequally nor it is served by reaching decisions over the allocation of such risks through and arbitrary and closed processes. The right to participate in decision-making speaks to procedural fairness. It allows interested and affected parties access to the process and the opportunity to influence the outcome. However if the burden of costs and risks cannot be shared fairly, the process of consultation is unlikely product satisfactory results. Given the political sensitivities involved, it is critical that representatives of the state in particular understand the importance of distributive justice and develop the skills to reconcile ostensibly contradictory interests in practical ways. Common goals should be identified, both technical and social issues should be taken into account, concerns that lend themselves to tradeoffs should be identified and intractable issues should be isolated in order to focus discussion and facilitate resolution. Finally in considering technical information, the nature of the value judgements and assumptions embedded in evaluating the magnitude of OHS risks should be appreciated and questioned where necessary.

Compartmentalisation
Compartmentalisation is a problem because institutions, policy-makers and professionals that have bearing on OHS are not well connected. While their actions may be consistent with their own areas of responsibility and interests, the potential for contradiction between them is high. Compartmentalisation not only leads to conflict but also undermines the importance OHS by diminishing incentives to treat OHS related problems seriously, weakening enforcement efforts and leaving gaps in regulation and coverage.

National policy, law and lead organisations have been central to the efforts in a number of countries to overcome compartmentalisation and develop a coherent and consistent approach to OHS and an OHS framework that is consistent with other policy imperatives.

In 1972, the Roben's committee said of the situation in Britain " In sum, excessive fragmentation of the legislation and of its administration is a serious obstacle to the creation of a more modern code of law, to its effective implementation and to the development of a clear and comprehensive strategy for the promotion of health and safety". At the time there were nine separate OHS statutes, five central government departments responsible for the administration of the OHS laws and seven separate central inspection authorities. The unification of the legislation and administration, a statutory declaration of principles and the establishment of a lead organisation together created the foundation of the new system of OHS policy and regulation in the UK. In the USA two years earlier, similar considerations lead to establishment of Occupational Health and Safety Administration, the National Institute of Safety and Health, the promulgation of Occupational Health and Safety Agency and the establishment of the National Advisory Committee on Occupational Health and Safety. While these developments brought about consistency within the field of OHS, the section on recent developments illustrates that ensuring consistency between the OHS policy framework and other policies remains a challenge in both Britain and the USA .

While national organisations create a basis for co-ordinating work, their establishment is likely to involve considerable upheaval in the short term when the new institutions are set up, amalgamated, reorganised and refocused. Furthermore, there are decisions to be made about the extent of co-ordination both internal and external. Staff roles and responsibilities are likely to change. Educational programmes designed to prepare staff for their new roles may be needed. New mechanisms for achieving interdisciplinary work, connecting with other institutions, reaching small firms and specific categories of workers such as contract workers, may need to be developed and sustained.

Changes introduce new challenges
It is apparent that changes to OHS policy and law have drawn more stakeholders into the process, and have created opportunities not only to address a wider range of concerns but also to insert civic values into decision-making. However these changes do not by themselves deliver socially acceptable and technically sound decisions. If changes in OHS policy and regulation are to be meaningful, the limitations of the institutions established and the rights introduced, as well as their potential to influence OHS performance positively, should be appreciated. For example, effective application of the right to know is contingent on the availability and timely use of information. While the right to participate rules out unilateral decision-making, it brings together science and public values in ways that are hard to predict and control. The risk assessment techniques employed by OHS professionals are invaluable in establishing priorities but contain implicit value judgements and assumptions that profoundly affect their outcomes. Finally problems related to fragmentation and compartmentalisation are not entirely resolved through national OHS policy, law and lead organisations. National policy, law and lead institutions do however create the basis for developing uniform standards and a consistent approach to OHS. They also enhance the chances of harmonising OHS and other policies, most importantly environmental, public health and economic policy.

THE SOUTH AFRICAN "OHS SYSTEM"
In South Africa, the occupational health and safety "system" is complex and there is no mechanism to provide or facilitate overall coherence in standards and policy. Three government departments, Labour, Minerals and Energy, and Health principally share responsibility for Occupational Heath and Safety (see Table 7 for an outline of the "system"). The budget of the Department of Minerals and Energy which serves approximately 467 000 miners is twice as much as that of the Department of Labour which is responsible for the health and safety of 14,2 million people. The Department of Health's budget, which is nearly

equivalent to that of the Department of Labour, is applied mainly to the mining industry. Budgetary information is summarised in Table 8. The activities of these three departments are guided by separate policies, each involving their own approach and their own priorities. No formal mechanism exists for establishing a national agenda and/or at least an agreed set of priorities. Furthermore the OHSA and the MHSA are not equivalent. They do not address worker participation, employer responsibilities and contract workers in the same way. The MHSA specifies occupational health and occupational hygiene requirements in greater detail. The legal mechanisms available for the resolution of disputes under the two Acts differ. In the event of disputes the MHSA, the reconciliation arbitration procedures come into play and issues concerning the exercise of rights are heard in the Labour Court. Under the OHSA, the state has to be persuaded to prosecute. The key differences between the OHSA and the MHSA are summarised in Table 9. The situation is further compounded by the existence of a number of other laws that also have a bearing on occupational health and safety. These include the Compensation for Occupational Injuries and Diseases Act of 1993 (COIDA), the Occupational Diseases in Mines and Works Act of 1973 (ODMWA), the Hazardous Substances Act of 1973 (HSA), the Basic Conditions of Employment Act, the Labour Relations Act (LRA) of 1995 and the National Environmental Management Act (NEMA) of 1998. The benefits provided in terms of COIDA and ODMWA are not comparable (see Table 10). The regulations promulgated in terms ODMWA which deal with graviometric sampling conflict with both the provisions of the MHSA which are concerned with occupational hygiene and the provisions of the Hazardous Chemical Substances Regulations attached to the OHSA. Furthermore the test of reasonable practicability on which both the MHSA and OHSA are founded, is eclipsed by the stricter tests for social justice and sustainable development included in NEMA and applicable to both government departments and owners or persons in control of " land or premises"(Parliament1998)chap.7.

As indicated in the introductory section changes to the OHSA and MHSA resulted largely from pressures brought about by the trade union movement and in the case of the MHSA also followed mining disasters which exposed shortcomings in enforcement and management practice. Developments from the 1970s onwards are summarised in Tables 11 and 12. Along with a number of non-governmental organisations (NGOs) concerned with environmental justice and conservation, trade unions particularly the Chemical Workers' Union, also played a role in the conception and drafting of NEMA. The mercury poisoning scandal in Cato Ridge KwaZulu Natal involving the British firm Thor Chemicals, which came to light in 1992 overshadowed proceedings. Three workers at the Thor chemical plant contracted mercury poisoning, and concerns about soil and water contamination and damage to plants and animals have not been cleared up (IDRC1995)

OHSA, the MHSA and NEMA introduce new concepts, framework legislation in which basic responsibilities and principles are set out, supported by more detailed regulations and codes. They also represent shifts in policy from reactive to proactive management of health, safety and environmental hazards and from unilateral to participatory decision-making. Yet all of the laws are essentially the product of a piecemeal reform process restricted to those departments which fall within the sphere of influence of the trade unions and more latterly the NGOs. While the other elements of the OHS system have been affected to a lesser or greater degree, they remain intact. Discontinuities and inconsistencies in standards are unaffected. As the foregoing discussion suggests, it could also be argued that in a number of respects, the new laws create greater complexity and extend the areas of overlap.

DEVELOPING AN OHS POLICY FRAMEWORK

Senior officials in the three departments, Labour, Mineral and Energy and Health are not unaware that fragmentation presents serious obstacles to providing an efficient service, establishing priorities and developing strategy. In November 1995 a tripartite committee was tasked with "developing overall national policy and strategy on occupational health and safety and the creation of a National Health and Safety Council". The establishment of this committee was motivated by the Department of Labour and endorsed by the Cabinet. In April 1996 the tripartite committee established a Committee of Inquiry which prepared a report on the subject of a national health and safety council for the then Minister of Labour, Mr Tito Mboweni. The Committee's brief was to:

- perform a situational analysis of existing legislation and administration of the state of occupational health and safety and compensation in South Africa that identifies:
  - the problems and the nature thereof

- the areas of disharmony/duplication/omission with Governmental departments having an occupational health and safety function;

- perform a comparative analysis, with international norms, of present practices regarding the administration of occupational health and safety and compensation
- produce a report with recommendations that would form the basis for deliberations with all stakeholders.

It completed its work at the end of May 1997. It was envisaged that the report would serve as a basis for future "deliberations with all stakeholders". These deliberations have not yet taken place.

The committee recommended that national policy be developed and provided detailed evidence of "areas of disharmony, duplication and omission" within the government agencies primarily responsible for OHS and the legislature. The committee opted for an incremental approach that would culminate in the promulgation of a single OHS law and favoured the idea of creating national council by statute that would develop policy and law and oversee implementation. In addition, a number of alternative structures were considered that could be employed to achieve the same. These included a voluntary council, a presidential commission, amendment of the powers of existing bodies or the use of NEDLAC (The National Economic Development and Labour Council which is an existing consensus-seeking policy structure) as a forum for OHS policy development. The option of developing national policy before establishing a council was also presented. In searching for a model for South Africa, the Committee reviewed international practice to establish the "state of the art", outlined the broad shifts evident in international practice and voiced concerns about the policy of self-regulation adopted by the Department of Labour. The Department of Labour's policy is not only is at variance with that of Department of Mineral and Energy but also fails to take account of experiences in Britain and elsewhere that caution against reliance on self-regulatory mechanisms.
The Committee of Inquiry also made specific recommendations related to the content of policy, law, and enforcement activities, namely that there is a need to (Benjamin and Greef1997):

- develop national OHS policy (p216)
- establish or designate a lead organisation (p 180)
- develop national OHS research policy (p 197)
- establish a national accident and disease reporting system (p 193)
- disseminate information to stakeholders and raise public awareness (p199)
- develop risk management techniques and promote their application (p153)
- develop a comprehensive strategy for setting standards and developing and new regulations (p156-157).
- develop overall regulatory policy with appropriate emphasis (determined by conditions within each sector) on work participation, compliance monitoring and sanctions (p155 and p 160)
- extend the capacity of the inspectorate to address both occupational safety and health concerns (p139)
- enhance the enforcment resources of the inspectorates (p129)
- utilise the resources of the various departments and inspectorates in co-ordinated way (p 144)
- ensure that all enforcement activities are consistent with national policy (p123)
- develop skilled OHS personnel (p 186)
- integrate different compensation systems, improve their operation and maximise their potential to promote prevention activities (p164, 170, 175 and 176)
- revise existing laws in preparation for the adoption of a single national OHS statute (p150).

KEY ISSUES AND CHALLENGES

That South Africa needs to overhaul its OHS system is indisputable. The evidence is unequivocal. Inconsistencies in policy, law and approach and well as organisational discontinuities represent formidable obstacles to a developing consistent approach to OHS in South Africa. New requirements contained in the OHSA and the MHSA to adopt a systems approach, address occupational health, involve workers, apply risk assessment techniques have further complicated matters as individual inspectors interpret these provisions differently. These and other concerns are well documented in a report commissioned by the government, which envisages an incremental process of reform and contains detailed recommendations on a range of issues.

The starting point for this paper is the principal findings contained in the report namely that:

- fragmentation, a lack of co-ordination, inconsistencies and sub-optimal use of resources characterise the present situation in South Africa
- an institution should be established "assume a leadership role in developing and implementing an overall health and safety policy applicable to all sectors of the economy"
- national policy and strategy should take account of changing forms of employment and changes in the industrial base.
- a number of programmatic issues ought to be addressed, related to enforcement, reporting and data capture etc.

Concerns that arise out of the report are:

- the unqualified emphasis placed on inclusive tripartite processes
- the unqualified recommendation that an incremental approach be adopted
- the unqualified endorsement of techniques such as risk assessment
- the likelihood that some of its recommendations would increase areas of overlap and duplication

There are also issues which are not raised in the report of the Committee of Inquiry but which nevertheless warrant serious attention namely:

- ensuring that OHS policy is consistent with environmental and public health policy
- balancing OHS policy and economic policy
- keeping abreast of developments in the international environment and identifying issues of importance to South Africa
- participation in forums in which international standards are developed.

Inclusive tripartite processes

Given South Africa's history, it is not surprising that insulated, top-down and bureaucratic approaches to policy development are eschewed in favour of open inclusive processes. The latter are fundamental to the South Africa government's stated objective to develop just and fair public policies. Open processes are expected to yield wise outputs that are in the public interest because they have majority support and because participants have equal opportunity to influence the content of policy.

However this is not the case in practice. It is important to acknowledge that stakeholders do not participate as equals. Some stakeholders are more powerful than others are. They may for example represent powerful interests that affect national trade and economic policy. Some stakeholders have more resources at their disposal and have better access to information and officialdom. Moreover all the parties likely to be affected by the decisions taken, are not necessarily represented. For example, the communities that live alongside of industrial facilities and the consumers of industrial products are not usually involved in OHS-related decisions.

Is it therefore realistic to expect a tripartite forum operating on a consensual basis to deliver policies that are fair and just and forward looking? Probably not, if the government fails to play a leading role in ensuring acceptable outcomes. In the case of OHS, chances of this happening are not remote. The field is not usually characterised by high politics and the public servants employed in this sector are not likely to be trained to deal with controversy. However, prospects could be improved by establishing ground rules and principles against which the outcomes can be evaluated. Such principles and rules could include the following:

- outcomes should be just and fair to those involved and affected
- they should take account of international developments and where appropriate be consistent with international developments
- outcomes should be feasible and acceptable to the public
- future constraints should be anticipated.

Finding a balance between these criteria is not however straightforward, notwithstanding the circumstances. It is therefore important to ensure that government representatives are well versed in the dynamics of public policy development and in ethical decision-making.

Furthermore, helping stakeholders to exercise their rights to participate and gain access to information more effectively can strengthen the participatory process. For example, efforts could be made to ensure that:

- the process is understood by all
- critical information is has been identified and shared
- technical information is presented in an accessible form
- difficulties in reconciling interests are anticipated, and the importance of fair compromise should is stressed.

Incremental approach

Both the OHSA and MHSA are relatively new. This taken together with the fact that the public sector is already stressed by the weight of many initiatives to reform policy and public institutions, suggest that an incremental approach will be adopted.

Yet, as indicated in an earlier section incremental approaches to policy developments are considered to be inappropriate because:

- they are inherently conservative
- they are unlikely to yield significant or radical social change
- decisions may represent the lowest common denominator
- recalcitrant parties can weaken the process significantly
- parties may be distracted by the demands of their respective organisations
- they are drawn-out and thus likely to be abandoned when political and economic circumstances change.

In addition to these procedural issues there are also substantive structural obstacles to developing a coherent policy framework. Current inconsistencies are entrenched in national laws and are administered by national government departments that have equal status. The resources available for OHS-related initiatives are split across departments and are determined in part by the departments themselves. Finally, OHS policy appears to be inconsistent with the expansion of the small business sector and with the drive to increase exports and productivity. Ambivalence about the importance of establishing a new OHS policy and legislative framework will persist unless these concerns are addressed.

Given the above it is important that:

- the links between OHS policy and the national interest be made explicit
- the process, assumed to be incremental, is shored up. This can be done by addressing issues of leadership, time frames and the responsibilities of individual government departments involved and likely to be affected.

Risk Assessment

As shown, the proliferation of risk assessment techniques is associated with the shift from a piecemeal approach to health and safety to one with is concerned with the operation of systems. Yet while risk assessment techniques are invaluable in establishing priorities, they contain implicit value judgements and assumptions that have a significant influence on the conclusions reached. In order to ensure risk evaluations are appropriate, it is important that value judgements whether related to methodological choices factors incorporated into calculations or subjective choices, are made explicit.

Avoiding overlap

There is a danger that the some of the proposals made by the Committee of Inquiry will exacerbate the problem of duplication. For example, certain of the committee's the recommendations overlap with the data gathering and research related activities currently undertaken by both the Department of Labour and the Department of Mines, viz. that the proposed National Occupational Health and Safety Council:

- establish a database and disseminate information on OHS and compensation related matters
- appoint task forces to investigate specific occupational health and safety and compensation related issues in conjunction with statutory bodies.

While it is unlikely that the Committee intends to further complicate matters, this apparent duplication of responsibilities highlights the importance of separating strategic and programmatic issues, and establishing priorities.

Consistency with other policies

Growing overlap between OHS policy, environmental policy and public health concerns, is an emerging issue that warrants attention. In the UK and USA where there is a substantive degree of institutional and policy coherence exists in respect of OHS, the need for overarching policy dealing with risk assessment and management overall has nevertheless become evident.

In South Africa, the conflict between environmental and OHS law not only involves the application of different standards - sustainable development and social justice as opposed to reasonable practicable- but also duplicates workplace rights to information, to participation and the right to refuse dangerous work. In addition, occupational health issues are not readily separable from public health issues. In order to improve the occupational health status of many workers, public health issues need attention such as the provision of clean water and energy sources. Conversely, industrial pollutants and waste compromise the health status of many people and in these cases addressing occupational health and safety issues are central to improving community health. Furthermore in South Africa as is the case elsewhere, the full costs of occupational disease and injury to a society are not reflected in the costs of production. Such costs are borne by the poor and marginalised sections of South African society.

For these reasons the interconnectedness of OHS, public health and environmental policy deserves to be addressed. In addition, the impact of industrial policy on the health and safety of both workers and the wider community should be acknowledged. By locating health and safety policy within wider macroeconomic policy it is possible to give priority to the prevention of problems associated with occupational health and safety hazards.

International developments

In the period extending from the early 1970's forward to the present, OHS policy and law gained national status. Today OHS policy is made in a world increasingly connected by trade and information technology and is in itself a subject of international deliberations. The attention of influential international bodies such as the World Health Organisation and the World Trade Organisation has shifted to issues related to the environment, industrial development policy (read sustainable development) and environmental health. Furthermore, supranational organisations such as the European Union have incorporated health and safety concerns into trade policy. Under these circumstances it is important that South Africa clarifies its stance and approach.

Moreover South Africa may be affected by environmental and public health issues that come to light in other countries. These may not only have a bearing on local occupational and public health policy but also may affect the economy. As discussed, effects of metals on public health and the general environment are current concerns in Europe and North America. Since South Africa is heavily dependent on mining and mineral processing for both employment and foreign exchange, it is imperative that policy makers become conversant with the issues and participate in international debates over policy and standards.

CONCLUSIONS AND RECOMMENDATIONS

Given the preponderance of policy issues and extent of restructuring of the public sector, it is unlikely that policy makers will opt for radical process of OHS reform. Nevertheless should an incremental approach be adopted, steps should be taken to ensure that:

- A clear statement of principles bounds the process
- A single authoritative institution oversees the process
- Key outcomes are specified
- Time frames are set
- Clear expectations of the tasks to be undertaken by the various government departments are set out
- The process is monitored at a senior level in government.

Since reform processes in South Africa are driven by a deep and justifiable distrust of unilateral decision-making, open participatory processes are favoured. Participatory processes alone are however unlikely to yield fair and equitable solutions. Supplementary mechanisms should be developed that support collective organisation, facilitate the identification and interpretation of critical data, improve access to such data, place certain data in the public domain as a matter course and that increase the accountability of powerful stakeholders.

Careful management of the policy making process itself is crucial. Open policy-making processes give rise to the problem of reconciling competing interests. Different perspectives, scientific findings and experiential knowledge must be taken into account. South Africa's experience, stemming from the negotiations in which the country's constitution was drafted, suggests that establishing explicit criteria at the outset is beneficial. Criteria appropriate to OHS decisions could include congruity with stated values such as equity and social justice, consistency key scientific and policy developments - local or international, technical feasibility, anticipation of future constraints, and acceptability to the public.

Given the inequities that exist in South Africa, emphasis on tripartism in OHS policy making should not amount to an abdication of the government's role to lead the process and ensure fair outcomes. Government officials should be trained in public policy development and provide strong leadership.

Risk assessment techniques are important tools that facilitate the evaluation of risks, the establishment of priorities and the setting of standards. The techniques can however only be employed intelligently when their limitations are understood and the assumptions and values implicit in risk assessment process are made explicit. It is thus important to ensure that the value judgements intrinsic to the techniques known and considered appropriate.

New forums which rely on participation and compromise, new formulations of standards based systems and performance, the introduction of risk assessment techniques and so forth require that decision-makers, enforcers and implementers develop new skills. It is thus important that training courses suited to the needs of the various role players be developed. Moreover, given the political sensitivity of many of the issues, it is critical that representatives of the state in particular understand the importance of distributive justice and develop the skills to reconcile contradictory interests in practical ways. Common goals should be identified, both technical and social issues should be taken into account, concerns that lend themselves to tradeoffs should be identified and intractable issues should be isolated in order to focus discussion and facilitate compromise.

Finally, occupational health and safety, and environmental concerns originating in other countries, particularly in Europe and North America have the potential to affect South Africa. South African institutions and policy makers should thus track developments elsewhere, become conversant with issues pertinent to South Africa, and participate in international deliberations over policy and standards. In some instances even be necessary for South African representatives to lead such discussions.

Appendix 1

Background: South Africa

The human rights thrust of current efforts to transform South African society can only be properly understood with reference to the policy of apartheid. This policy segregated South Africans on the basis of race for over 40 years, reserved government power for white South Africans and violated the civil liberties of the majority of the population i.e. people classified as Africans, coloureds and Indians.

Apartheid policy was entrenched in law and vigorously enforced by the police and army. Black South Africans were unable to exercise any meaningful political rights. Job reservation, severe restrictions on rights to own land and property, and laws designed to control the movement of the indigenous black population in particular, ruled out meaningful participation in the formal economy. In addition, the basic needs of the black population in respect of education, health and housing were systematically neglected. 10% of the country's population were forcibly relocated. Labour migrancy particularly from impoverished rural areas became entrenched and segregated black townships, effectively dormitory suburbs where urban workers were housed, were established at locations some distance from the thriving metropolitan areas populated mainly by white South Africans. Evidence of the consequences of apartheid is clearly apparent in demographic data and quality of life indicators.

Population by Racial Designation

Racial Designation	Population (1000s)	Total Population (%)
African	31 128	76,7
Coloured	3 600	8,9
Indian	1 046	2,5
White	4 435	11
Unspecified	375	<1
Total	40 684	~100

* Figures rounded off. *Source: CSS, South Africa. 3/3/99*

As indicated in the above table, Africans constitute about 77% of the population. In total, black South Africans account for 88% of the population. (The term black South African includes coloureds and Indians). This black–white split coincides with most significant difference between South Africans in respect of their socio-economic status and quality of life.

The apartheid policy however established a racial hierarchy that applied to black South Africans as well. In overall scheme of things, the needs and rights of Africans were the most neglected and curtailed. People classified as coloured and Indian respectively were treated in a less neglectful way. As following tables show, the indicators of socio-economic status and quality of life are worst for Africans, followed by coloured and Indians respectively. The indicators for white South African are comparable to that of the middle and upper classes in developed countries.

Average Income by Racial Designation

Racial Designation	*% Population	*Household income average p/a (Rands)	% below Poverty Datum Line**
African	76,7	23 000	54
Coloured	8,9	32 000	25
Indian	2,5	71 000	8
White	11	103 000	<0.05
Total	99.1	*n/a*	44

** Benchmark R180 per person per month. *Sources: *CSS, South Africa. 3/3/99*

*** WB funded: Living Standards and Development Survey*

65% of income goes to richest 20%; 3% goes to the poorest 20%.
Gini-coefficient: 0.59, equivalent to Brazil and Ecuador. Approximately 38.5% of the potentially active labour force is unemployed (CSS, South Africa 1999).

As the preceding table indicates, the legacy of apartheid is also evident in economic data that tends to parallel racial divisions. From an economic point of view, South Africa is one of the most unequal societies in the world. Africans receive the smallest incomes on average, are most likely to be unemployed and destitute.

Infant Mortality Rate (1981 –1985)

Racial Designation	Infant mortality rate, deaths per 1000 live births		
	National	10 major urban centres	Rural/ peri-urban
African	94-124	38.6	100-135
Coloured	51.9	25.9	66.0
Indian	17.9	17.1	19.8
White	12.3	12.3	12.3

Source: MRC survey, 1991 p25

Infant mortality rates serve as an overall indicator of the heath status of a population. Death during the first months of life is strongly associated with the quality of antenatal services, delivery and immediate post-natal care. Not surprisingly infant mortality rates in South Africa vary by race and rural and urban status. The urban poor represent the most marginalised, impoverished section of the population.

Life expectancy at birth (based 1991 estimates)

Racial designation	Number of years
African	60,3
Coloured	66, 46
Indian	68,89
White	73,11

Source: CSS, South Africa 2/12/99

Given the social context, as expected in South Africa, average life expectancies vary by race and parallel socio-economic indicators.

Education levels and Illiteracy Rates (based on 1991 estimates)

Racial designation	Education	Illiteracy rate %
	None, secondary complete, tertiary	
African	24.3; 12.1; 3.0	23,36
Coloured	10.2; 12.3; 4.3	8,94
Indian	6.5; 30.4; 10.0	4,5
White	1.2; 40.7; 24,1	0,48

Source: CSS, South Africa 2/12/99 and 3/3/99

Educational apartheid was enforced in schools, technical colleges and universities. Curricula emphasised racial differences and ethnicity and prepared black South Africans for little more than manual labour. Apartheid education policy today limits the country's economic prospects. Technical and scientific skills particularly, are in short supply. Unemployment is highest among Africans and amongst people with incomplete schooling, as opposed to those with no schooling.

TABLE 1: OCCUPATIONAL INJURY IN SOUTH AFRICA

Traumatic Injury	1996	Range since 1993	Rates (1996)
Deaths			
Non-mining*			
Transport	**591**	**591-942**	**Unknown**
Building and Construction	*292*	*383-433*	
Agriculture and Forestry	*64*	*64 -114*	
Iron and Steel	*62*	*62-119*	
	47	*47-59*	
Mining	**378**	**374-506**	
Gold	*304*	304-401	
Coal	*29*	25-47	**1/1000**
Platinum	*42*	42-55	
Other	*3*	no variation	
Non –fatal injuries			
Non-mining*	**7 881**	**10 556-7881**	
Transport	*1 654*	*1654-1996*	
Building and Construction	*1 253*	*1589-1253*	**Unknown**
Agriculture and Forestry	*728*	*983-738*	
Iron and Steel	*722*	*894-722*	
Mining	**6 924**	**6858-8720**	
Gold	*5 752*	*5752-7252*	
Coal	*255*	*191-255*	**Rate 14/1000**
Platinum	*882*	*882-1178*	
Other	*35*	*33-35*	

Notes:

- *The full extent of injury is unknown. The figures are mainly representative of those in registered employment and in full-time jobs.*
- **4 sectors with the highest incidence of injury out of a total of 23 sectors*
- *The mining sector employed 467000 workers in 1996 (In 1985, 513 000 workers were employed in gold sector)*
- *6,5 million people in total are in registered employment*
- *7,7 million people are in unregistered employment of which 800 000 people work in the domestic sector.*

Sources : Chamber of Mines 1996 report; Department of Labour 1997 Report

TABLE 2: OCCUPATIONAL DISEASE IN SOUTH AFRICA

Source	Figures
Occupational Health and Safety Directorate (Department of Labour)	no figures
Chamber of Mines (Private sector)	no figures
Office of Compensation Commissioner (Department of Labour) 1996	2482 claims
Office of Commissioner of Occupational diseases in Mines & Works* (Department of Minerals and Energy) 1996 1992	 2032 claims 7 957 claims

Source: Benjamin and Greef 1997

Notes:
It is generally accepted that occupational diseases are under-diagnosed and under- reported.
**Changes in reporting criteria in 1994 had the effect of reducing claims. For example, to be compensated for TB, the condition must now be disabling.*

TABLE 3: ESTIMATED COST OF OCCUPATIONAL DISEASE AND INJURY

GDP South Africa (1996)	R 483 BILLION
Estimated costs, 3.5% of GDP (1996 figure)*	R 16,98 BILLION
Undiagnosed occupational lung disease amongst miners** 196 000 South Africans 84 000 foreigners	R 9,96 BILLION

Notes:
**Benjamin and Greef (1997) estimates based on NOSA ratios and HSE (UK) model:*
Ratio of Compensation:Indirect costs:property damage = 1:1:5
Occupational disease = ½ occupational accidents
Total costs to society = ½ costs to employer
***Trapido, Goode and White (1997) estimates based on:*
Modeled on results of Libode study: 240 per 1000 PN ; 113 per 1000 mining-related TB

TABLE 4: OCCUPATIONAL CATEGORY BY RACIAL DESIGNATION, EMPLOYED AGED 15-65

OCCUPATION	Black African		Coloured		Indian		White		Unspecified		Total	
	No	%	No	%	No		No	%	No		No	%
Legislators, senior officials and managers	96 774	26,7	30 221	8,3	27 243	7,5	204 622	56	4 167	1,2	363 028	4.0
Professionals [1]	417 577	48,9	73 472	8,7	41 161	4,8	310 363	36,4	10 006	1,17	852 578	9,4
Technicians and associate professionals [1]	174 125	32,6	54 799	10,2	35 841	6,7	263 439	49,3	5963	1,12	534 169	5,9
Clerks	246 834	34,9	104 739	14,8	53 566	7,58	293 369	41,5	8 524	1,12	**707 032**	7,8
Service workers, shop and market sales workers	506 493	62,5	92 378	11,4	35 215	4,3	169 604	20,9	7 113	0.9	810 804	8,9
Skilled agricultural and fishery workers	266 068	0,75	35 350	9,9	1 764	0,5	50 421	14,2	2 023	0,6	355 626	3,9
Craft and related trades workers [2]	***879 555***	***68,83***	152 922	12	42 102	3,3	192 920	15,1	10 389	0,8	1 277 888	14,0
Plant and machine operators and assemblers[3]	***468 829***	***73,3***	89 560	14,0	31 841	4,9	44 650	6,9	5 153	0,8	640 033	7,0
Elementary occupations[3]	***1 914 923***	***80,6***	371 861	15,7	18 758	0,8	53 793	2,26	16 113	0,7	2 375 449	26,1
Unspecified	711 297	0,59	124 212	10,4	75 994	6,3	273 271	22,8	12 466	1,0	1 197 239	13,1
Total	5 682 476	62,4	1 129 515	12,4	363 486	4,0	1 856 452	20,4	81 917	0,9	9 113 847	100,1

Source: Central Statistical Services (CSS), @ www.statssa.gov.za, South Africa. 3/3/99

Notes:

1. *The Africans in the professional and associate professional categories are mainly teachers and nurses. These are poorly remunerated professions which are dominated by women.*
2. *Africans in the craft and related trades' category are mainly men who are artisans' assistants. Until very recently it was very difficult for Africans to qualify as artisans. On the mines these occupations were reserved for whites specifically.*
3. *People most likely to be exposed to occupational hazards, fall into these categories.*

TABLE 5: OCCUPATIONAL HEALTH AND SAFETY SYSTEMS: KEY FEATURES AND TRENDS

KEY CHARACTERISTICS	IMPACT OF...	CONSEQUENCES AND IMPLICATIONS
Occupational Health and Safety laws are consolidated.	National institutions are established. National laws are adopted containing general provisions supported by specific codes or guidelines.	National standards are established which apply to all industries. Performance standards that apply to a wide range of situations and circumstances including those of suppliers to industry and the manufacturers of industrial goods are adopted. Differences in production costs between countries due to differences in OHS standards become apparent and the subject of political debate.
National occupational health and safety policy is developed.	The reduction of occupationally related disease and injury assumes national importance. A more comprehensive view of the extent of occupationally related injury and disease emerges.	The impact of OHS hazards on the health and safety of the wider community is more widely appreciated. Overlap between OHS and environmental concerns become apparent. The bases for international co-operation, international standards, trade sanctions based on OHS practices are established.
Emphasis is placed on the prevention of occupational injury and disease.	A systems approach to OHS is developed. Risk assessment techniques proliferate and are widely applied.	The importance of leadership, organisation and strategic intervention becomes evident. Evidence of the limitations of risk assessment techniques especially quantitative risk assessment becomes available.
Explicit reconciliation of economic and occupational health and safety priorities is required.	The reconciliation of economic concerns is sought through the application of cost-benefit analysis techniques and the “reasonably practicable” test.	Developments in the environmental field expose the limitations of cost-benefit analyses and the reasonably practicable standard. Interest in the “sustainable development” standard grows.
Participatory processes become the norm.	Open processes develop, involving bi-partitite, tri-partite procedures and public participation. Supporting rights are established: to information, to participate and to representation.	Difficulties in reconciling the roles of experts, lay experts, interested parties and the general public, become evident.

TABLE 6: SPREAD OF THE NEW OHS POLICY AND REGULATION MODEL

KEY ELEMENTS	COUNTRY/ INTERNATIONAL INSTITUTION
Major enabling statute	European Community, United Kingdom, Australia, New Zealand, Denmark.
National policy	*European Community, United Kingdom, Australia, Zimbabwe.
Lead organisation	European Community, United Kingdom, Australia, New Zealand, Denmark, United States of America., Malaysia.
Separation of policy and technical/ administrative functions	European Community, United Kingdom, France, Netherlands Belgium, Australia, USA.
Interest holder /interest group participation formalised	United Kingdom, France, Netherlands, Belgium, Australia, USA, South Africa, Namibia, Lesotho, Swaziland, Malaysia, Hong Kong, Ontario in Canada.
Impact of OHS on the wider community addressed	European Community, International Labour Organisation, United Kingdom, South Africa.
Balance between economic and OHS concerns sought through cost-benefit analysis and best practice with in bounds of reasonable practicability.	European Community, United Kingdom, Australia, New Zealand, Denmark, United States of America., Malaysia.

General Source: Benjamin and Greef, 1997. South Africa

**Single act provides legal basis for health, safety, environment and consumer protection (1986)*

TABLE 7: SOUTH AFRICA'S OCCUPATIONAL HEALTH AND SAFETY "SYSTEM"

The Department of Labour (DoL)

Laws
- The Occupational Health and Safety Act (1993)
- The Compensation for Occupational Diseases and Injuries Act (1993)
- The Basic Conditions of Employment Act (1983)
- The Labour Relations Act (1995)

Agencies /Agents
- Chief Directorate:OHS
- The Compensation Commissioner
- Rehabilitation Units

Licenced by the DoL
- Rand Mutual Assurance Company Ltd
- Federated Employers Mutual Association

DoL – Business Joint Venture
The National Occupational Safety Association

The Department of Mineral and Energy (DME)

Law
- The Mines Health and Safety Act (1996)
- Nuclear Energy Act (1993)

Agencies
- The Mine Safety and Health Inspectorate
- Safety in Mines Research Advisory Committee
- The Council for Nuclear Safety

The Department of Health (DoH)

Laws
- The Occupational Diseases in Mines and Works Act (1973)
- The Hazardous Substances Act (1973)

Agencies/Agents
- The Medical Bureau of Occupational Diseases (MBOD)
- The National Centre for Occupational Health (NCOH)
- The Compensation Commissioner for Occupational Diseases
- The Epidemiology Research Unit (ERU)
- Environmental Health Officers (local authority level)

Other Departments, Laws and Agencies with overlapping / shared responsibilities

Department of Environmental Affairs and Tourism
- The National Environment Management Act (1998)

The Department of Water Affairs and Forestry
- The Department of Agriculture
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (1947)
- The National Water Act (1998)

The Department of Trade and Industry
- Standards and Environment Directorate

The Department of Safety and Security
- Explosives Act (1956)
- The South African Police

The Department of Transport
- The Aviation Act (1974)
- The Merchant Shipping Act (1951)
- The Road Traffic Act (1989)

THRUST OF REFORM	Reaction by trade unions to high accident and occupational disease rates and unilateral decision-making on the part of the state and the private sector
LIMITS OF REFORM	Limited to Departments of Labour, Mineral and Energy, and Environmental Affairs and Tourism i.e. Departments within the sphere of influence of trade unions and/or non-governmental organisations

TABLE 8: SOUTH AFRICA: OHS BUDGETS AND STAFFING

Government Department	Budget (millions of Rand)	Staffing
Labour	R25 998	25 posts at Head office; 188 regional posts up to 1/3 in each of the 12 regions vacant.
Health	R26 328	R13 300 is used on the administration ODMWA which applies to the mining industry.
Minerals and Energy	R51 105	27 posts, 3 unfilled at Head office; 120 regional posts, 41unfilled.

Source: Benjamin and Greef 1997

TABLE 9: Comparison of South Africa's Mine Health and Safety Act (MHSA) and Occupational Health and Safety Act (OHSA)

Provision	MHSA (1996 &1997)	OHSA (1993)
Responsible institution	Department of Minerals and Energy	Department of Labour Note OHSA and not MHSA applies to workers in the energy sector.
General Duty of Care	Includes employees, contractors and members of the general public who may be affected by activities.	Includes employees and members of the general public who may be affected by activities. Contractor safety and health is not the responsibility of site management but the contractor.
Risk Assessment	Requirement to assess risks includes provisions for maintaining of records of risk assessment activities, the inspection of risk assessment records, consultation with OHS committee over elimination and control of risks and periodic review.	General requirement to assess risks, prevent exposure to hazards and to use personal protective equipment as a last resort only.
Occupational safety	Accident investigations to be done in co-operation with health and safety representatives and to be conducted such that underlying causes are identified. Copies of investigation reports to be made available to OHS representatives.	No specific requirement of the accident investigation process.
Occupational health	Person qualified to deal with occupational health must be appointed. Medical surveillance to be done. Annual reports to be prepared. Incidents of serious ill health to be investigated.	Medical surveillance to be carried out if situation warrants.
Occupational hygiene	Qualified occupational hygienist to be engaged. Medical surveillance to be done. Records to be kept. Health threatening occurrences to be investigated.	General provisions to establish an occupational hygiene program. For chemical substances detailed requirements are set out in the Hazardous Chemical Substances Regulations.
Ergonomics	To be taken into account in the design and manufacture of articles to be used in the mines.	No specific requirements
Worker involvement	Representatives negotiate over OHS matters, are to be consulted, may consult experts, may inspect processes or reports, have access to specific reports, may assist and direct workers etc. Full-time representatives provided for.	Similar to MHSA in many respects but emphasis on consultation and reporting to the employer. No full-time OHS representative provision, although not specifically excluded.
Workers' rights	To refuse dangerous work, to information, to elect representatives, to be consulted.	No explicit right to refuse dangerous work. (implicit)
Trade unions	Representative trade unions are recognised and negotiations / consultations take place through them.	No explicit role for trade unions.
Disputes	Labour courts, Commission for Conciliation, Mediation and Arbitration. Emphasis on conciliation and mediation.	State courts. State considers merits of case, prosecutes if persuaded to do so.

Sources: Benjamin and Greef 1997; OHSA (1993) and MHSA as amended 1997.

TABLE 10: Key differences between South Africa's Compensation for Occupational Injuries and Diseases Act (COIDA) and Occupational Diseases in Mines and Works Act (ODMWA)

Provision	COIDA (1993)	ODMWA(1973)
Responsible institution	Department of Labour	Department of Health
Coverage	All workers except those covered by ODMWA for certain* occupational diseases and domestic workers.	Certain* occupational diseases. Miners and those workers employed at "works". Definition of works specific to ODMWA. (Not equivalent to MHSA definition.)
Benefits	Lump sum payments and pensions for employees with disabilities assessed as being above 30%. Awards based on employees' earnings.	Lump sum payments only, based on employees' earnings. Based on race until 1994 and until then black workers received up to 13 times less than white workers for similar conditions.
Benefit examination	No provision	Mineworkers and ex-mineworkers are entitled to a benefit examination at no cost.
Fitness for work examinations (Red tickets)	Not contemplated. Part of the general provisions of the OHSA and its regulations and the more detailed provisions of the recently promulgated MHSA.	Carried out in terms by the Miners Bureau of Occupational Diseases, sub-bureau and mines in term of the ODMWA. Duplicates certain of the MHSA and OHSA requirements.
Occupational Hygiene (Graviometric dust sampling)	Not an aspect of this Act. Provided for in OHSA and its regulations and MHSA.	Graviometric dust sampling is the basis for determining air quality indices which in turn, are used to determine compensation levies. No meaningful information is gathered for controlling and eliminating hazards. This requirement conflicts with MHSA and OHSA requirements.

Sources: Benjamin and Greef 1997; COIDA (1994) and ODMWA (1973)

* Pulmonary tuberculosis, pneumoconiosis and chronic obstructive pulmonary disease.

TABLE 11: ANTECEDENTS TO DEVELOPMENTS IN 1980s

Unionisation of black workers during the 1970s: Formation of Fosatu, General Unions and NACTU.

Erasmus Commission into Occupational Health, 1975: warned of parlous situation; widespread occupational disease, differential treatment of workers based on race; inconsistencies in regulatory framework. Stressed that poor working conditions could become an organising issue for trade unions and a flash point for industrial disputes.

Wiehahn Commission in to Labour Legislation, 1979: advocated deracialisation of industrial relations, participatory processes, consultation. Particularly concerned about institutionalised racism in the mining industry.

Nieuwenhuizen Commission into Occupational Disease, 1981: Drew attention to disparities between laws (mining vs rest). Proposed rationalisation. Recommended tightening of compensation criteria in anticipation of deracialisation of ODMWA and increases in the number of claims filed by black workers

TABLE 12: DEVELOPMENTS SINCE BEGINNING OF 1980s

MINING	INDUSTRY IN GENERAL
At the beginning of the 1980s: Mines and Works Act of 1956	At the beginning of the 1980s: Factories Act 1967: General OHS regulations, noise control regulations
Mines and Works Amendment Act 1986 NUM gives evidence to parliament on job reservation	Workmen's Compensation Act:1981 *Factories Act splits*: Basic conditions of Employment Act 1983 Machinery and Occupational Safety Act of 1983 NGOs comment on white papers National Manpower commission established in late '80's. COSATU participates.
Occupational Diseases in Mines and Works Act amendments proposed. Act is deracialised. NUM participates in deliberations. Gives evidence to parliament.	MOSA replaced by the Occupational Health and Safety Act (OHSA) in 1993. COSATU represented on OHSA Advisory Committee. Independent experts appointed to advisory committee.
	Workmen's Compensation Act of 1941 replaced by Compensation for Occupational Injuries and Diseases Act in 1993 COSATU representatives join advisory board. Expert committees more representative.
Occupational Diseases in Mines and Works Act amended in 1994. Racial determination of benefits end. Mining Commission starts hearing evidence. Feb/Mar 1994	
Mines Health and Safety Act 1996 promulgated. NUM joins four standing committees: Tripartite Mine Health and Safety Council ▪ Mining regulation advisory committee ▪ Mine occupational health advisory committee ▪ Safety in Mines Research Advisory Committee NGOs asked to participate in expert sub-committees.	
Committee of Inquiry in National Health and Safety Council report published in 1997. Finds evidence of fragmentation, duplication, omission and contradiction.	

References

Ashford, N. (1976). Crisis in the Workplace: Occupational Disease and Injury. A report to the Ford Foundation. Cambridge, USA, MIT Press.

Beckwith, G. C. The myth of injury prevention incentives in workers' compensation insurance. Work, health and environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guildford Press.

Benjamin, P. and J. Greef, (1997). The report of the Committee of Inquiry into a National Health and Safety Council in South Africa. Johannesburg, Department of Labour.

Buchanan, M. and G. Scoppetuolo. Environment for co-operation. Building worker-community coalitions. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guildford Press.

Burke, T. Back to the future: rediscovering the role of public health in environmental decision making. Handbook of environmental risk decision making. Values, perceptions and ethics. R. Cothern (1996). Washington DC, CRC. Lewis Publishers.

Carnegie Commission, U. S. A., H. L. Kaplan and D. M. Costle (1993). Risk and the Environment. Improving regulatory decisionmaking. New York, Carnegie Commission on Science, Technology, and Government.

Carson, W. G. Hostages to history: some aspects of the occupational health and safety debate in historical context. Workplace safety and law. B. Creighton and N. Gunningham (1985). The Industrial Relations of Occupational Health and Safety., Sydney, Australia. **Croom Helm Australia**.

Catron, B. L. Ethics and values in environmental values in environmental risk assessment - a synthesis. Handbook for environmental risk decision making. C. R. Cothern (1996). Washington DC, CRC. Lewis Publishers.

Committee of Inquiry, U. K., (1972). Safety at Work. Report of the Committee on Health and Safety at Work. 1970-1972. Chaired by Lord Roben. London, Secretary of State for Employment and Productivity. United Kingdom. Her Majesty's Stationary Office.

COMSA, (1997). Industry Overview 1997, Chamber of Mines of South Africa (COMSA).

COSATU, (1999). COSATU's response to 1999/2000, Congress of South African Trade Unions (COSATU). South Africa. **1999**.

Cothern, R. C. An overview of environmental risk decision making: values perceptions and ethics. Handbook for environmental risk decision making. Values, perceptions and ethics. R. C. Cothern (1996). Washington, DC, CRC. Lewis Publishers.

Creighton, B. The Occupational Health and Safety Act 1983 (NSW) and industrial relations. The Industrial Relations of Occupational Health and Safety. B. Creighton and N. Gunningham (1985). Sydney, Australia, Croom Helm Australia.

Creighton, B. and N. Gunningham. Is there and industrial relations of occupational health and safety? The Industrial Relations of Occupational Health and Safety. B. Creighton and N. Gunningham (1985). Sydney, Australia, Croom Helm Australia.

Dawson, S., P. Willman, et al. (1988). The limits of self regulation, Cambridge University Press.

Department of Finance, S. A., (1988). Growth, Employment and Redistribution. A Macroeconomic strategy. Pretoria, South African Government.

Department of Labour, S. A., (1997). Annual Report, South African Government. Directorate of Communication of the Department of Labour.

Drake, C. and F. B (1983). Law of health and safety at work. The new approach. London, Great Britain, Sweet and Maxwell.

Durvasula, (1988). The development of occupational health services in India: issues of inequity and problems of regulation. Boston, Harvard School of Public Health, Takemi Program in International Health.

Freudenberg, W. R. Strange chemistry: environmental risk conflicts in a world of science, values and blind spots. Handbook for environmental risk decision making: values, perceptions and ethics. C. R. Cothern (1996). Washington D. C, CRC, Lewis Publishers.

Gerrard, M. B. (1994). Whose backyard, whose risk? Cambridge, Massachusetts, The MIT Press.

Gosling, M., (1997, May 14). Thor slammed for toxic waste imports it couldn't process, The Cape Times. www.ban.org/ban_news/thor_slammed.html. **1999**.

Gunningham, N. Workplace safety and law. The Industrial Relations of Occupational Health and Safety. B. Creighton and N. Gunningham (1985). Sydney, Australia, Croom Helm Australia.

Gustavsen. Direct workers' participation in matters of work safety and health: Scandanavian strategies and experiences. Work and healtn in the 1980s. Experiences of direct workers participation in occupational health. S. Bagnara, R. Misiti and H. Wintersberger (1985). Berlin, Sigma Edition. Science Center Berlin.
Hayter, S. Social rules in the game of globalisation. Globalisation, social norms and worker protections(1998). Cape Town, Institutute of Development and Labour Law. University of Cape Town. **1/98**.
Head, L. and M. Leon-Guerrero. Fighting environmental racism. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guilford Press.
Heinrich, W. H. (1931). Industrial Accident Prevention, McGraw-Hill.
HSC, (1998). Health and Safety Commission. Plan of work for 1998/99. Summary, Health and Safety Commission, Great Britain. **1999**.
ICEM, (1997). Apartheid's Industrial Legacy. **1/1997:** 1-2.
IDRC, J., (1995). A popular guide to Environment Reconstruction & Development, International Development Research Centre. **1999**.
ILGRA, U. K., (1998). Risk Assessment and risk management . Improving policy and practice within government departments. Second report prepared by the Interdepartmental Liason Group on Risk Assessment., U K Government. Interdepartmental Liason Group on Risk Assessment (ILGRA).
ILO, (1997). Encyclopaedia of Occupational Health and Safety, International Labour Organisation. **1997**.
Jasanoff, S., Ed. (1994). Learning from disaster. Risk management after Bhophal. Philadelphia, USA, University of Pennsylvania Press.
Jasanoff, S. (1998). "The political science of risk perception." Reliability Engineering and System Safety(59): 91-99.
Jasonoff, S. (1988). "The Bhopal disaster and the right to know." Sociology, Science and Medicine **27**(10): 1113-1123.
Kelman, S. (1981). Regulating America, regulating Sweden: A comparative study of occupational safety and health policy. Cambridge, MA, MIT Press.
Kooijmans, J. and T. Sparreboom. Trade and the protection of workers: exploring opportunities to promote respect for core labour standards in the SADC. Globalisation, social norms and worker protection(1998). Cape Town, University of Cape Town. Institute of development and labour law. **1/98**.
Levy, B. and D. Wegmen, Eds. (1995). Occupational Health. Recognising and preventing work-related disease. Boston, MA, Little Brown and Company.
Marri, G. and C. Stanzani. The struggle against health hazards at the workplace in Italy from 1968 onwards. Work and Health in the1980s. Experiences of direct worker participation in occupational health. S. Bagara, R. Misiti and H. Wintersberger (1985). Berlin, Edition Sigma, Science Center Berlin.
Misiti, S. and S. Bagnara. Participation in Health Control at the Workplace. Work and Health in the 1980's. Experiences of direct workers' partipation in occupational health. S. Bagnara, R. Misiti and H. Wintersberger (1985). Berlin, Edition Sigma. Science Centre Berlin.
Monk, V. and B. Cropley, (1997). Occupational health and safety managment systems and safety performance in the building and construction industry, National Occupational Health and Safety Commission, Australia.
Naschold, F. Dynamics without structural change. The case for the Federal Republic of Germany. Work and Health in the 1980s. Experiences of direct workers' participation in occupational health. S. Bagnara, R. Misiti and H. Wintersberger (1985). Berlin, Sigma Edition. Science Center Berlin.
Noble, C. Regulatory and institutional structure in the work environment. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guilford Press.
NOHSC, (1999). NOHSC role, National Occupational Health and Safety Commission, Australia. **1999**.
Oscarsson, B. Swedish reforms on working environment- legislation, cooperation, research and training. Work and Health in the 1980s, Experiences of direct workers' participation in occupational healtn. S. M. Bagnara, R and Wintersberger, H. (1985). Berlin, Edition Sigma, Science Center Berlin.
Parliament, S. A., (1998). National Asbestos Summit, National Parliamentary Portfolio Committee on Environment and Tourism. South African Government. **1999**.
Parliament, S. A., (1998). National Environmental Management Act. Pretoria, South Africa, South African Government Printers.
Ramirez, R. and D. Leemans. A participative sociotechnical approach to occupational health and safety. Work and Health in the 1980s. Experiences of direct workers' participation. S. Bagnara, R. Misiti and H. Wintersberger (1985). Berlin, Sigma Edition. Science Center Berlin.

Smith, M. C., C. T. Kelsey, et al. Risk assessment and occupational health. Overview and recommendations. Work, health and environment. Old problems, new solutions. C. a. W. Levenstein, W (1997). New York, The Guilford Press.
Soggot, M., (1998). Britain may block SA asbestos injury cases, Daily Mail and Guardian. **1999**.
Trapido, A., R. Goode, et al. (1998). "Costs of occupational lung disease in South African gold mining." Journal of Mineral Policy, Business and Environment. Raw Materials Report. **13**(2): 26-33.
Walt, G. (1994). Health policy. An introduction to process and power. People, governments and international agencies - who drives policy and how it is made. Johannesburg, Witwaterand University Press.
Wartenberg, D. and C. Chess. The risk wars. Assessing risk assessment. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guilford Press.
WBC, (1996). Comparison of occupational health and safety statutes, Workers' Compensation Board, Regulation Review Section. British Columbia, Canada. **1999**.
Weeks, J. (1990). "Undermining the protections for coal miners." New Solutions(Summer).
Weil, D. (1991). "Enforcing OHSA: The role of the Labour Unions." Industrial Relations **30**(1): 20-35.
Weil, D. (1996). "Regulating the workplace: the vexing problem of implementation." Advances in Industrial and Labour Relations **7**: 247-286.
Weil, D. Reforming OHSA. Modest proposals for major change. Work, Health and Environment. Old problems, new solutions. C. Levenstein and J. Wooding (1997). New York, The Guildford Press.
White, I., (1998). Asbestos in the 1990, Herdfordshire County Council, UK. **1999**.
Willis, R. The role of the Commonwealth. The Industrial Relations of Occupational Health and Safety. B. Creighton and N. Gunningham (1985). Sydney, Australia, Croom Helm Australia.
Wintersberger, H. Work and health - some arguments for involving workers in the design of occupational health systems. Work and Health in the 1980s. Experiences of direct workers' participation in occupational health. S. Bagnara, R. Misiti and H. Wintersberger (1985). Berlin, Edition Sigma. Science Center Berlin.