Evaluating the Social and Economic Consequences of Workplace Injury and Illness

Jo Burton, Frances Butcher, Richard Whatman, Andrew McLeod, Sue Graham, Rashmi Rajan (DoL); Mary Adams (FoRST); Margaret Bridge (ACC); Roberta Hill, Roopali Johri (Web Research)

Rashmi Rajan
rashmi.rajan@osh.dol.govt.nz
Workplace Safety and Health
Department of Labour
New Zealand

Paper presented at the 2002 Australasian Evaluation Society International Conference October/November 2002 – Wollongong Australia. www.aes.asn.au

Abstract

A number of studies in New Zealand and overseas have explored the economic costs of work-related injuries and illnesses to the employer and to a lesser extent the injured or ill worker. Comparatively little investigation has been conducted into the acute and ongoing social effects, including ill health, associated with work related injuries and illnesses, the extent to which these effects 'ripple out' into the community, and what circumstances may cause or exacerbate these effects.

In 2001, the Department of Labour and ACC began an exploratory qualitative study examining the range of consequences, including economic costs, of workplace injury and illness for injured and ill employees, their families, and the community.

The objectives of the study were:

- *To explore the social and economic consequences of workplace injury and illness for injured and ill employees, their families, and the workplace;*
- *To identify key characteristics that determine social and economic consequences; and*
- *To inform investment in health and safety in the workplace.*

The study outcomes aim to fulfil a number of needs. These include identifying the 'hidden' costs of occupational injury and illness, informing future research projects and informing illness and injury prevention activities (by the Government, employers and employees).

A wide range of participants was selected so that cases could be contrasted and compared based on participants' experiences and on a range of circumstances.

Initial findings show that major social and economic consequences result from workplace injury and illness. These consequences extend beyond the injured and ill individual to impact on families, the community and government.

Key Words

social, economic, consequences, costs, injury, illness, visible, ripples

Purpose of the Study

The Department of Labour (DoL) and the Ministry of Economic Development in 2000 undertook research examining the incidence of compliance costs with the Health and Safety in Employment Act 1992 (the HSE Act).[1] Over a similar period, DoL was also undertaking an evaluation of the effectiveness of health and safety legislation through case study research examining employer responses to, in particular, the ACC legislation.[2] These pieces of research provided indirect and tantalising insights into some of the consequences of workplace injury and illness and the impacts on employers.

It is well documented how money and resources spent on compliance divert resources away from investing in the business; however, the money and resources that are lost through the effects of non-compliance – such as work-related injury and illness – and the savings from prevention strategies; are not. In addition, the extent to which these effects 'ripple out' into the community, and what circumstances may cause or exacerbate these effects is also relatively unknown.

No one person experiences, sees or accounts for the full consequences of a workplace injury or illness; and the full depth and breadth of costs and consequences are often not measured or recorded in any official statistic. Often they are not recorded anywhere.

Employees who are harmed will inevitably bear some of the consequences of what happens to them by themselves, as others simply will not experience or fully understand the degree of pain or isolation that they may experience. Likewise the costs and consequences to family, friends, or work colleagues often go unrecorded and unobserved, although they are nonetheless real. Many consequences are unable to be measured directly as an economic cost or some other cost, such as a loss of intimacy between spouses, or the breakdown of a family unit due to an unexpected death. The experience of being harmed at work can be devastating, with profound emotional consequences for all those involved. People may become isolated, estranged from their community and depressed.

Employers see the cost of their ACC levies, the cost to their sick leave budget, they may observe the impacts on the morale of their staff or the injured or ill worker. They may also have to count the cost of employing new staff and the loss in productivity as a result of any injury. Sometimes there are legal costs where they face prosecution. Often entirely forgotten are the costs to government of simply investigating, processing, and otherwise dealing with workplace injury and illness, such as administration costs incurred by ACC or the Occupational Safety and Health Service.

While it is virtually impossible to objectively quantify these costs, it is still of great value to attempt to isolate and identify them. Ringen explains that presenting data with humanity attached to it can be a powerful stimulus for change:

> *Research that holds out the consequences of our failure to prevent injuries and illnesses from occurring is a powerful stimulus for change. Prevention results from change, and change results from our ability to influence decision makers in industry, unions, and government. … This is research that decision makers can understand. Statistical methods are important, but they are not an end …*[3]

In 2001 DoL and ACC decided to undertake an exploratory detailed case study research, to obtain a deeper understanding of the full consequences of the harm, including economic costs, from workplace injury and illness. The study used fifteen case studies to understand the social and economic costs of injury and illness through the employees' own experiences and perspectives and those of their social, work, and family groups.

Study Objectives

The objectives of the study were:

- to explore the social and economic consequences of workplace injury and illness for injured and ill employees, their families, and the workplace;
- to identify key characteristics that determine social consequences; and

---

[1] The Costs and Benefits of Complying with the HSE Act, 1992 Occupational Safety and Health Service of the Department of Labour (OSH), Ministry of Economic Development (MED) April 2001.
[2] Evaluation of the ACC Reforms: Report of Phase Two, Department of Labour and Centre for Research on Work, Education and Business Limited. December 2000.
[3] Knut Ringen. Where do all the injured Workers Go? Or, how about a little humanity in research? American Journal Industrial Medicine 36:587-588. 1999.

- to inform investment in health and safety in the workplace.

While this study is an initial, exploratory investigation into work-related injury and illness, it goes some way to illustrating a range of outcomes, some of which are:

- the impact of workplace hazards on the lives of workers and their families;
- the adequacy of workers' compensation benefits;
- the effects of illnesses and injuries on productivity, competitiveness, labour-management relations, employer costs;
- the factors that affect return to work;
- the barriers to reporting of workplace illnesses and injuries to workers' compensation and other systems; and
- the extent and diversity of social and economic consequences.[4]

In addition, Boden et al state that an improved understanding helps frame discussion about the appropriate level of resources that society should devote to the injury and illness prevention and to the lessening of their impacts when prevention efforts fail.[5]

Methodology

Case Study Approach

Different objectives place different demands on measures of burden so clarity was needed about the purpose of the study before choosing the methodology.

A case study approach, using a mix of quantitative and qualitative methods and data, was deemed the appropriate methodology to explore these questions for reasons given below.

The case study approach involves triangulating data from a range of sources, using a variety of research methods. For this research it involved analysis of OSH and ACC data and existing research reports, and using case studies involving semi-structured interviews with the injured or ill employee, their family, work mates, and, if appropriate, OSH and health professionals who were involved.

Because of the exploratory nature of the study, 15 case studies were selected to express contrasting variables, which enabled the project to encompass a broad range of experiences with workplace injury and illness.

Since the focus was on changes in HSE legislation and its impacts, employees who had had serious accidents after 1992 (when the HSE Act was introduced) were selected.

Main Research Questions

The research questions were drawn from the study objectives and included the following:

1. What are the main social consequences of workplace illness and injury and how can they be identified and avoided?

1. What are the key characteristics (for example gender, ethnicity, age, family status, injury/illness type, and location) that shape the social consequences and economic costs following occupational illness or injury?

1. What is the nature and extent of the financial costs (for example loss of income, medical costs) of workplace illness and injury and how can these be valued in economic and social terms?

1. What are the links between social consequences and economic costs of workplace illness and injury?

Research Process

The research objectives, questions, the case study framework, and a process for selecting the participants were developed. This involved four main steps:

- A literature review to inform this research process.
- Developing semi-structured interview questions.

---

[4] Boden, Leslie and Elyce A Biddle, Emily A Spieler. Social and Economic Impacts of Workplace Illness and Injury: Curent and Future Directions for Research. American Journal of Industrial Medicine 40:398-402 (2001). P 400.
[5] Boden, et al (ibid) P 400.

- Workshops to develop an analytical framework and then to begin the data analysis.
- The report writing process.

Based on the interview data and the reading of the literature, a framework for analysis of the data from interviews within a case was created and this led to cross-case analysis.

Selection Criteria

A mix of people was selected so that cases could be contrasted and compared based on participants' experiences and on a range of circumstances. The following were the main criteria for the selection of respondents:

- *Age* – based on the assumption that the age of 40 years is approximately halfway through one's working life, people between the ages of 20 and 60 years were selected.
- *Family status* – employees who had economic dependants within the family unit, and those who did not were selected.
- *Socio-economic status* – including occupation, income, and education, both those in low and those in the high status were selected.
- *Occupation* – people from high-risk industries (those with high representation in the injury and fatality statistics) were selected.
- *Gender* – males and females were selected.
- *Nature of workplace accident or conditions/environment* – persons with occupational illnesses and work-related injuries were chosen. Occupational illnesses included stress, asthma, Leptospirosis, and solvent induced neurotoxicity.
- *Work status following accident* – employees who had been unable to return to the same occupation/job/employer, and those who were able to, were selected.
- Time of accident/NODs notification/exposure – was between 1993 and 2001.

Interviews

The team, following the criteria listed above and after detailed discussion and consultation, selected fifteen cases. The process of case selection took place over a period of time. As respondents were selected, the following steps were taken to set up interviews with the primary and secondary respondents. OSH branches were contacted and asked to suggest possible participants within certain criteria. Initially this was very broad. As the study progressed, the criteria became more specific to ensure that the selection factors above were being met. Most cases were identified by OSH inspectors (whether the case had been prosecuted or not). However, the OOS cases were identified through FinSec (Union). Once the project team had identified preferred cases, the OSH inspector involved in the case would then ring the prospective participant, telling them about the research, and asking them if a member of the project team could contact them. The project team would decide who would conduct the interviews, and then one of the interviewers would ring the participant, explain the study in more detail, and send out information and consent forms. Confidentiality was also stressed.

The Report

The report was the product of a joint effort of the team members. Different team members wrote different chapters and initial drafts were made in consultation with other team members and during workshops. When the report was in complete draft form with case identifiers, etc. removed, it was tailored into a standard report template. It was then made the responsibility of one of the team members to 'finish' and 'polish' the report, giving it an even flow and a 'single voice', as the individual chapters written by different members of the team naturally had differences reflecting their respective styles of writing. The report was then commented on by members of the Expert Group and circulated for internal consultation. Participants were provided an opportunity to comment on it prior to this stage if they wished.

The Research Team

The research team consisted of seven researchers from the Department of Labour, a researcher from ACC, and two independent researchers. The team came from a range of backgrounds and disciplines to ensure that the research was as comprehensive and sound as possible.

The Expert Group

An expert group was put together because it was seen as an important way to gain external input for the study. The group consisted of representatives from universities and other injury prevention agencies. It included those not directly involved in the research, but with an interest in the area.

Risks and Limitations

- A key limitation of using a case study approach is that due to the small sample size, the information is not always seen to be representative of the population. However, this limitation is largely irrelevant as, in this case depth of information was required rather than the ability to generalise, and the cases were put into their contextual framework to provide a wider and more holistic picture. Also, it was an exploratory study.
- The research team had to be very careful through the entire process of the implementation of the study, to make sure that no personal biases or perspectives entered the interpretation and analysis of the data and that all conclusions and results were robustly grounded in the raw data.
- In the process of interpretation and analysis, there was the risk of data being 'tortured' too much. However, because the data had to be qualitatively analysed, it required a fairly detailed, in-depth, and often iterative process of analysis (which included identifying common emerging themes related to physical, emotional, and psychological consequences for injured and ill employees, their families, and the wider community and pulling out links that connected these themes).
- The team consisted mainly of female members (there were two males, of whom only one took part in the interview process). There was a possibility of the information provided being influenced by this gender equation.
- There are limitations (such as subjectivity, and limited recall and memory) to self-reporting.
- The examination took place at one moment in time and the on-going costs and consequences can only be estimated and imagined beyond that point.
- There are also significant limitations to human perception and our ability to really understand other people's experience. The study has, however, endeavoured to provide as full a picture as is possible within the constraints of time, budget, recollection and perception of the consequences of those involved in the 15 cases that were studied.

Findings

Individual

Past research indicates that injured workers bear about 30 percent of the total costs of workplace injury and illness, which include loss of income, pain and suffering, loss of future earnings, past investment, and medical costs[6]. There was a varied range of social and economic consequences for the injured and ill participants of the study. These were influenced by a number of factors individually or in combination. These are discussed in more detail below.

- *Personality*

  Reactions of injured and ill people varied greatly and ranged from those who blamed themselves for their accident/illness, to those who were perfectionists and those who drove themselves hard in spite of their pain and suffering, to others who isolated themselves from friends, family, and colleagues. The personality of the individual influenced these reactions and made a significant difference to the way he/she reacted to their injury or illness, and to the speed and path of their recovery process.

- *Understanding Medical Conditions and Treatment*

  A fundamental issue for a person who is injured or ill is a need to know what is wrong with them. This relates to wanting and needing to know what can be done to help them recover, how long the recovery process is likely to be, if they will recover completely, and what they should be doing. Different people had different levels of understanding of their medical conditions and treatment and this did, in fact, influence their recovery process. There was also the issue of a gradual process – the fact that a gradual process makes

[6] Work, Health, and Safety: Inquiry into Occupational Health and Safety. Volume 2. Industry Commission, Canberra. 1995. P 18.

it harder to diagnose and for the ill individual to recognise that there is a problem. Participants often made an enormous effort to understand their condition and thereby overcome it.

- *Understanding and Attitudes of Family and Friends*

  Injury or illness put strain on the relationship in a number of different ways, through emotional stress, financial pressure, or physical isolation. In all the cases, family and friends were deeply impacted in one way or other and this eventually led to either deeper bonding or dissolution of the relationship. In a number of cases, the injury/illness resulted in temporary or permanent loss of intimacy between partners.

- *Effect of Lack of Support*

  Participants felt isolated from support structures. These included sources of information, support groups, and at times, infrastructural support. This too, had a bearing on their ability to cope with the situation and on their recovery process.

- *Work/Workplace Attitudes*

  Attitudes and support received (or the reverse) from employers, colleagues, supervisors, and managers affected the psychological as well as the physical recovery process of individuals, as well as the way their ability to understand and thereby handle their condition. In certain cases (particularly in the fatality case and where the individual received severe head and spinal injuries), it also impacted on the affected person's family's ability to deal with the condition as well as on their reaction.

- *Career*

  Longer-term careers of eight of the injured/ill were affected directly as result of their condition. The range included shifting to other jobs, having to retrain to move careers, and being completely unable to continue what they had been doing and actually doing nothing.

- *Economic Costs*

  Seven of the injured/ill suffered significant financial loss as a direct result of their injury/illness. These costs included ongoing medical costs, direct income loss, transport costs, and losses related to lifestyle changes people had to make because of their condition.

- *OSH*

  In two of the cases mention was directly made about the negative affects that the behaviour of OSH staff had on the injured/ill person, and that the depth of the impact was to the extent of affecting the recovery and rehabilitation in one of the cases. However, in the majority of cases, the experience with OSH was a positive one, in which it was felt that OSH staff had provided considerable information and support.

- *ACC*

  The role ACC played and the influence it had on the severity of the consequences on the affected people was significant. Many of the cases found ACC frustrating to deal with. This was especially significant in the cases where there was an occupational illness, where individuals were under a greater burden of proof. In four of the cases compensation was driving the diagnosis.

- *Legal Procedures*

  Legal procedures in four of the cases had a direct negative impact on those most affected by a workplace injury or illness.

It is quite apparent from the above discussion that the social and economic consequences and costs to the affected people were enormous, ongoing, and rippled out to family, friends, and the larger community. A majority of these costs were non-recoverable. These were workplace injuries and illnesses of a common nature and nothing particularly out of the ordinary; they could and do happen everyday and to ordinary people. But most importantly, they were injuries and illnesses that happened due to failures and errors that could quite easily, and with relatively minor costs, have been prevented.

Friends/Family

The immediate family suffers emotionally, mentally and financially. In all the selected cases the members of the family suffered and relationships were affected, mostly negatively. It was also seen through a number of examples in the selected study cases that the impact of an injury or illness does not limit itself to the individual

and their immediate family, but does in fact have a ripple effect that can extend to parties outside this immediate circle (eg caregivers). The major areas of impact are listed below.

- *Initial Reaction*

  For families of the affected individual, the initial reaction was inevitably one of shock and disbelief, especially in the case of injuries. However, the extent to this reaction, and the emotional trauma to the family, was mitigated or intensified by a number of factors: the severity of the injury or illness, the degree of information and support that was available, the stage at which this was provided, and the amount of follow-up care that was offered. These factors continued to influence the experience of the families and friends of the injured or ill employees long after the initial reaction.

- *Impact on family relationships*

  The toll of the injury or illness on the relationship of the individual and their partner was severe in most cases. Injury or illness put strain on the relationship in a number of different ways, through emotional stress, financial pressure or physical isolation. A further contributing factor was whether or not there was a clear understanding of the effect the injury or illness had on the individual, and whether they understood the impact it might have had on their partner. In a number of cases the strain placed upon the relationship was too great, causing the couple to either separate, or resulting in a redefinition of the relationship.

  The injury or illness also had a major impact on the relationship of the individual with their families; children, parents, and siblings. For young children in the family, the effects of an illness or injury on an individual could substantially change the way that person was able to interact with them, sometimes resulting in physical and/or emotional isolation. Nor was the impact on relationships limited to young children. In the cases where the individual had adult children, the injury or illness and its aftermath also profoundly affected their relationship with them.

- *Moving outside of the family*

  It was seen through a number of examples in the selected study cases that suffering does not limit itself to the injured/ill person and his/her family, but does in fact have a ripple effect that can extend to parties outside this immediate circle.

- *Loss of social interaction*

  Injured and ill workers and their families are often isolated socially. The major reasons for self-isolation appeared to be due to lack of understanding by others, self-consciousness about injuries or, in the case of solvent neurotoxicity, inability to cope with the resulting mood swings. Close friends were often unable to relate to the new circumstances brought on by the workplace accident or illness. In the case of the major caregiver, self-isolation was caused by time taken to care for or treat the injured or ill participant.

- *Impact on work situation/career/responsibilities*

  For the families of the individuals, the injury or illness could bring about an enormous change in their situation, impacting on their career, lifestyle, and household responsibilities. Many families found that their domestic and family responsibilities altered due to the injury or illness. The changes were either directly related to caring for the injured or ill individual, or assuming their normal responsibilities when they were unable to perform them. Although in some cases this was temporary, lasting anywhere from a few weeks to a few months, in others it was a permanent change. While the injury or illness often had an adverse effect on the employment or study prospects of the individual, this impact was not limited to them. Partners also gave up employment or study to become the major caregiver following the accident or onset of illness.

- *Lifestyle*

  In almost all the cases, the injury or illness resulted in a significant change in the lifestyle of the victim and their families. This varied from being a comparatively temporary change, while the injured or ill individual was recovering, to being massive and permanent. The degree to which this occurred depended largely on the nature and severity of the injury or illness, but was also significantly effected by other factors, in particular the pre-accident or injury situation, as well as financial considerations.

  For a number of the participants, there was a significant change due to the drop in income that occurred after the event. Even for participants who were receiving ACC, there could be a considerable financial burden. Weekly compensation pays 80% of the employee's pre-accident earnings, and having their income cut by 20% could place serious financial strain on families.

- *Support*

  One of the factors that could make a substantial difference to the effective rehabilitation of the injured or ill individual, and aid their ability to cope with the injury or illness both physically and mentally, was the degree of family support available to them. In some cases, the family played an active role in the rehabilitation of the injured or ill person, becoming involved in their medical treatment. The degree of this involved varied, depending on the medical knowledge of the family member. Support for the injured or ill individual was not limited to family members. In many cases, friends also offered considerable help during the rehabilitation process.

  In a number of cases, families found that there were barriers that prevented them providing the degree of support they wished to offer. This often related to the availability of support structures or information, or the difficulties experienced in dealing with government institutions. There was also a lack of support for partners of inured and ill workers.

- *Family/friends and workplace*

  In a number of the cases, family members expressed some animosity to the individual's workplace. This varied from concerns about the safety of the work practices, to anger at how the workplace had responded (or failed to respond) to the accident or illness.

The impact of workplace injury and illness is far greater than simply its effect on the individual. The consequences ripple out to include many other sectors of the community. Principle among these are the family and friends of the injured or ill worker, who frequently have to bear much of the burden of their care, rehabilitation and subsequent lifestyle changes. The present of a support family and social network could make a considerable difference to the timeliness and effectiveness of an individual's recovery.

Medical

It was found that the occupationally injured tend to be the "elite cases" in relation to ACC entitlement. They have more opportunity and ease of gaining entitlement because the injury is generally obvious and indisputable in relation to how and when it happened. There is a specific and visible event. The onus of proof for occupational illness is generally more difficult. There is rarely a specific event as the illness occurs as a gradual process and establishing a relationship between exposure and symptoms is difficult, particularly when other non-work related conditions can be have the same symptoms. Results are frequently inconclusive.

Many of the occupational disease cases experienced delays in getting a diagnoses for a variety of reasons. Whilst those with occupational disease were often diagnosed late or inaccurately, there were also cases of incorrect and late diagnoses of physical injuries which impacted on recovery time. Inappropriate treatment or delays in treatment had an impact on both the recipient of care and the provider. Recipients experienced increased pain, delayed recovery, psychological and emotional reactions, and complications because of delays in treatment. The health often had issues related to time and resource. Many of the cases had multiple treatment providers over lengthy rehabilitation periods.

Workplace

Occupational injury and illness had a considerable impact upon the workplace. This was not just economically such as through monetary cost but in other unexpected ways as well. This covered not only primary actors such as the employer and the affected employee but employee representatives, workmates and other staff. Similarly, the effect of an accident highlighted systems within workplaces and their respective strengths and weaknesses. A number of themes relating to the workplace were identified.

- *Employment Relationship*

  The nature and condition of the employment relationship was important in comprehending the social and economic consequences for the workplace. The key components of this relationship were influence and responsibility. Perceptions of responsibility and influence in the employment relationship were just as important as actual power. These issues were illustrated through examining the perceptions of the employment relationship, the right to refuse work, the work process and the roles of those within the workplace.

- *Union*

  Union involvement and advocacy played an important role in the workplaces in this study. This was evident in four cases. The union was not just a collective bargaining agent but also a health and welfare

organisation. The union was able to redress imbalances between an individual and a workplace. It did this by providing resources, knowledge of government systems, and support.

- *Colleagues*

  Following an accident in the workplace, colleagues of the injured person displayed a variety of reactions. Responses from them to the injured ranged from hostility through indifference to minimisation, inability to support, guilt, and support. Often the visibility of the injury influenced the reactions of colleagues. The more visible an injury was, the greater sympathy and understanding it received. There was a distinction in attention given to occupational illnesses as opposed to occupational injury. Occupational injuries such as fractures, amputations, and severe lacerations are more noticeable than occupational illnesses. Often there were doubts over the diagnosis of occupational illnesses. Colleagues also were concerned over the possible ripple effects of the accident for themselves and the business they worked in.

- *Role of Supervisor and Employer*

  The role of the employer and the supervisor was important in both the injury event and what occurred afterwards. The supervisor and employer's approach often impacted on the rehabilitation outcomes for the worker. The most successful outcomes for both the worker and workplace were when the employer took an active role with the employee and appropriate responsibility for what occurred. This was expressed in terms of keeping the injured worker in touch with the workplace, assisting with rehabilitation and re-entry to the workplace and accepting responsibility for change. Other employers blamed their worker and denied their accountability when an accident occurred.

- *Health and safety systems*

  The health and safety systems in the workplaces in this study were on occasion shown to be deficient in key areas. Even if these areas were minor they often had larger ripple effects for worker safety and the workplace. These deficiencies took the form of a lack of knowledge on both the part of the worker and the workplace; procedures and equipment were incomplete; health and safety systems were impractical and unworkable; policies and procedures were non-existent and there was a failure in the supervisory role or the employer. For health and safety systems to function effectively there had to be both responsibility from the worker and the workplace. Where there were inadequacies in health and safety systems and workers within the workplace did not feel empowered to ask for change this resulted in unfavourable outcomes. A lack of knowledge of potential dangers in a workplace and industry were a notable problem in the study.

- *OSH and the Workplace*

  OSH has two roles; provision of information and education, and enforcement of legislation. When an accident occurs and an investigation is begun this will often and unsurprisingly produce tension between OSH and the workplace. This was illustrated in two of the fifteen case studies. It should be noted that the case studies were selected for the project because an accident occurred and required a response from OSH. As such they are not a representative sample of all interactions between workplaces and OSH. Even within the study tension and conflict is not necessarily permanent and OSH is able to continue good working relationships with workplaces.

- *ACC*

  Experiences with ACC varied with many workplaces either being neutral or supportive towards them. The most common complaint from employers and workplaces was difficulties they had communicating with ACC. Employers found it hard to access information on the affected employee and how the employee's situation affected the workplace.

- *Economic Costs*

  Economic costs to the work place centred on a variety of factors. Among these were legal costs resulting from fines and prosecutions (including preparing for cases), lost production and morale in the workplace, extra health and safety compliance work, damage to plant and equipment, public odium and staff costs. Staff costs were made up of hiring and training new staff, paying out redundancy and over-employment (creating a new job while the worker recovered).

When an accident occurred its effects were not felt just by the injured person and their family but by their colleagues and employers as well. The best outcomes for the workplace and the worker were when they co-operated and acknowledged each other's responsibilities. Critical to this was workplace actors understanding their roles and their place in the employment relationship. In all of the cases there were costs to the workplace.

These centred on such items as prosecutions, replacing workers and improving systems. The small to medium was in particular extremely vulnerable to these costs. Unexpected accidents were a threat to these businesses continued liability.

Government

Legislative shortcomings, real and perceived, can greatly add to the social and economic consequences of the injury. There is sometimes inadequacy of the legislation to meet the financial and social needs of the injured person. This was shown in the struggle to get some ACC claims accepted, as conditions were not recognised as a gradual process injury. In two cases this led to costly appeals.

There was a range of responses, positive and negative, towards OSH and ACC. Injured persons, their families and even employers were also annoyed when ACC would not provide assistance. OSH was often seen as supportive by the injured person, but over reactive by the employer.

There was a positive side to the social and economic costs incurred by the government. Some 'clients' are satisfied with the levels and nature of the services provided and were grateful for the assistance. In difficult circumstances the professionalism and support of occupational health and safety staff and ACC staff, lessened the negative aspects of the injury experience. The costs associated with the provision of high quality care and support do minimise the costs of injury.

Conclusions

A number of key messages came through for the research team from the case studies. These were:

1. *Big accidents but minor failures.*

Workplace accidents often resulted from minor failures in workplace systems or practices.

2. *Accidents have huge consequences and they ripple out*

Accidents had huge consequences not just for the participant but for their family, their workplace, and their community. The effects rippled out from the participant to touch the whole community.

3. *Costs were enormous, non-recoverable, and are ongoing*

These were costs for the injured/ill individual, family and friends, the workplace, and the community at large.

4. *In spite of common characteristics between cases, consequences varied greatly*

Although there were commonalties in the key characteristics between the cases in the study, there were multi-factorial influences of personal, social, organisational, and environmental variables and the complex interplay of the individual worker with a variety of forces from the workplace, community, medical profession, worker's compensation system, and the broader society.

5. *Visibility vs invisibility of the condition (injury vs illness)*

There was a distinction between occupational injury and illness. Where there was an obvious physical injury with a demonstrable link to a workplace cause, there was (largely) more support given by friends, the workplace, and timely diagnosis and treatment Conversely, in the illness cases ie solvent neuro-toxicity the opposite occurred.

6. *Relationship between cause and consequences*

This research showed that if the company has good OHS systems, their support systems for injured/ill employees are also better.

7. *Over-arching themes*

Analysis showed that a number of over-arching themes emerged from the research. These included isolation, suffering, responsibility, blame, power, and understanding. They were most often linked and inter-dependent and influenced the recovery and coping ability of the affected.

8. *Support*

Support, whether from family, friends, colleagues, workplace, and/or community, was again a significant factor in the recovery and coping ability of the injured/ill person, as well as for others affected.