Final Report

Meat Industry Survey of OHS Culture

Research and Report:
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Acknowledgments

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This project was not possible without the willing cooperation of the managers and employees from the 14 participating companies who gave their time, ideas and information freely.

Professor Tony Winefield provided invaluable guidance and assurance in terms of the methods of data collection and analysis.
Executive Summary

The Meat Industry OHS Committee identified ‘culture’ as a core issue in the poor OHS performance of the industry, and initiated this project to identify the underlying safety cultural within the Meat Industry. The methodology used was based on the following steps:

1. A literature review
2. Gathering industry injury data statistics for baseline data
3. Drafting and trialing survey documents and protocol
4. Conducting the survey with a sample of 14 meat industry companies
5. Analysis of survey results
6. Final report and feedback to individual participating companies

This process also included reference to a social research authority, Professor Tony Winefield, Professor of Psychology, University of South Australia.

The survey was in three parts:

- An Organisational Data interview held with a company-nominated administrative officer/manager.
- An interview of a Site Group of Managers using the Safety Culture Survey form as a focus.
- An interview of a Site Group of Employees using the Safety Culture Survey form as a focus.

The sample of companies represented all meat types, both metropolitan and rural, and small/medium and large in South Australia.

A major output of the project is the Safety Culture Score for individual companies, constructed from collated company data, taking into account employee and manager attitudes and organisational policies, procedures and systems.
Summary key findings

There is a modest statistical support from the data for the value of the Safety Culture Score in predicting safety performance. Company size bears no relationship to safety culture score. All companies in the survey have a lot of room for improvement. The companies at the lower end are in need of some safety culture remediation.

Looking at the ratings given by participants, the statements for which there is significant difference between manager and employee ratings appear to reflect three themes:

- Managers perceive a more open, encouraging management approach to involving employees in safety thinking.
- Managers perceive a more genuine, active management commitment to safety improvement.
- Managers perceive more positive workplace conditions and morale.

The main theme on which there is general agreement between managers and employees is employee understanding of how to work safely.

A factor analysis of all the items rated by participating employees and managers and all the components of the composite Safety Culture Score yielded seven factors that may be used separately or collectively to develop a model of safety:

1. Safety culture
2. Safety engagement
3. Application of safety
4. Procedural safety
5. Employee control of safety
6. Hazard awareness
7. Risk acceptance

A safety ecology model has been built based on these factors:

- Safety culture—The composite attitudes, beliefs, values and habits of working of employees, managers and owners.
- Safety climate—The organisational practices, policies and structures that relate to safety directly or indirectly—the tangible signs of safety that employees can perceive.
• Safety conditions—the underlying factors that will influence attitudes and decisions impacting on safety.

• Safety behaviours—the specific individual responses to safety incidents.

Taken in summary, the evidence from this study of safety culture in the South Australian Meat Processing Industry leads to a number of clear conclusions:

1. Concern and intention to be safe is almost universal. The survey results show that managers and employees want to be safe and to work safely.

2. The attention given to safety and the level of detail of activities that bear on safety culture varies markedly.

3. There is a significant attitudinal thread of ‘busy-ness’ in many of the companies contacted—in fact and as expected, ‘too busy’ was a common reason for declining to participate.

4. There is a gap between managers’ perceptions about safety and employees’ perceptions.

5. There is evidence that communication isn’t as sound as it might appear (or at least, as people are perceiving).

6. Only one or two of the companies in the survey demonstrate good access to safety information and the skills to use it systematically.
Recommendations

Recommendations arising from this study include:

- A Safety Culture Self-Audit and External Audit that companies can use both to check their Safety Culture and to provide a framework of the key elements of a good safety culture.

- Resource companies needing to change significantly via ‘safety culture injections’—implanting one or two people who are very experienced in working in positive meat industry safety.

- A Best Practice Safety Culture Toolkit be developed which includes collected effective safety culture ideas and specific models suited to different sized firms, and which has a clear focus on responsive, proactive injury management strategies.

- Change the way recruitment and selection occurs in the meat industry, to also select for the right character and attitudes to work and working safely. Include labour hire personnel in this, as use of labour hire to ‘shift the risk’ leaves the host employer still with both WorkCover and common-law responsibilities.

- Develop a training strategy that includes a regular cycle of introductions to safety and ‘refreshers’ and customising safety training to the industry.

- Select a group of five meat company CEOs to participate in a special safety coaching process in conjunction with Safety Culture Toolkit.

Following the acceptance of the Final Report by the industry committee, industry feedback is planned in two forms:

- A specific, individual debriefing to the companies involved.

- A brief report as an accessible summary of the research and recommendations.
Background

Identification of Need for this Project

The Meat Industry OHS Committee conducted strategic planning to identify the main OHS issues of concern. The strategic planning identified ‘culture’ as a core issue within the industry with a ‘them and us’ approach between management and employees. These cultural issues were considered by the planning group to lie at the root of the poor OHS performance within the industry. Based on these conclusions, the WorkCover Corporation Grants Committee approved a grant based upon a project application from the Meat Industry OHS Committee for an OHS Culture Survey. This project seeks to identify the underlying cultural issues and to develop and conduct a survey of the OHS Culture within the Meat Industry.

Development of the Methodology

The methodology for this study was shaped by the terms of the tender documentation:

Details of the work to be undertaken are:

- Gather industry injury data statistics for baseline data.
- Literature review and develop an appropriate and effective draft survey script.
- Form a trial focus group including subjects from red meat (beef and sheep), pork and poultry. Undertake a trial interview and survey with the focus group using the draft survey.
- Complete final survey document based on focus group experience.
- Develop a Statewide plan for the conducting of interviews involving the identification of key positions/personnel to be interviewed and the seeking of employers endorsement to participate in benchmarking exercise.
- Formally conduct a combination of employer and employee interviews (up to a maximum of 40 management interviews and 150 employee interviews). This will include regional subjects and it is expected that
employers be grouped into focus groups of 2 – 5 employers whenever possible. Employees are to be interviewed on site in groups whenever possible. Subjects in red meat (beef and sheep), pork meat and poultry are to be included. A minimum of 15 companies are to be visited, including small, medium and large companies, from which the required employer management and employee interviewees are to be sourced. Some intrastate travel will be required, with locations of meatworks ranging from the West Coast of SA, to Peterborough, to the South East of the State.

- Analyse results and prepare comprehensive draft report of findings which includes the determination of Meat Industry OHS culture benchmarks.
- Consult with industry committee regarding findings and develop draft recommendations for strategies to improve the OHS culture in the SA Meat Industry.
- Final Report (written) to industry committee.
- Feedback and debriefing to companies involved.

(Tender Brief: Meat Industry Survey Of OHS Culture, 2000)

The methodology was developed based on these terms, through:

- Consultation with the consultant (McPhee Andrewartha Pty. Ltd.) and the Safety Culture Project Working Party of the SAfer Industries Meat Industry OHS Committee.
- A detailed review of literature that examined safety culture research to date.
- Reference to models presented in the literature to derive a set of points of inquiry for the study.

This process also included reference to a social research expert, Professor Tony Winefield, Professor of Psychology, University of South Australia, for opinion and guidance on the validity and appropriateness of the survey tools and sampling methodology.

**Literature Review**

The project was commenced with a comprehensive review of literature pertaining to safety in the meat industry and to safety culture research broadly (Appendix 7). The detail of the survey approach, and the items to be included in the survey tools were derived from this review.
Methodology

There were nine steps in the agreed methodology:

1. Gather industry injury data statistics for baseline data
2. Literature review and draft survey documents
3. Trial focus group
4. Final survey documents
5. Survey design
6. Analysis
7. Industry consultation
8. Final report and feedback

We will discuss each of these in detail.

1. Gather industry injury data statistics for baseline data

Baseline industry data was sourced from WorkCover SA records (kept in IDEAS) for South Australian data, and also other published sources for all-of-Australia data.

Also some data was requested from existing organisational records. Some organisations were more able to provide this data than others were. In effect, ability to provide the basic safety data requested formed a measure in itself of safety information management.

This was anticipated, as it has been our experience in our previous work with meat processing companies (Andrewartha et al., 1996) that the record keeping systems vary dramatically from one organisation to the next.

The baseline data was to address the distribution across the entire industry, across segments of the industry (eg red meat, pig, poultry, smallgoods) and across food processing industry broadly of:

- Injury incidence (overall and by categories such as type of injury, injury severity, longevity of active claims).
- Days lost due to injury (overall and by categories).
• Cost of claims (overall and by categories).

It was planned that these baseline measures be used:
• to establish a set of benchmarks for the meat processing industry, for individual companies to reference against, and
• as covariates in analysing and contrasting the survey data obtained on organisational cultures.

As a consequence of the difficulty in obtaining reliable comparative data from all participating companies, the latter objective of using baseline measures as a covariate in analysis is not possible. However, these measures are still reported as benchmarks for the industry.

2. Literature review and draft survey documents

The purpose of the literature review is two-fold:
• To determine what OHS research and projects exist in Australia and internationally that use safety culture as a point of reference, as a source of innovative ideas for addressing meat industry safety, in particular in relation to the culture within the industry and elsewhere.
• To contribute to the development of an appropriate and effective draft survey protocol and script.

It is our experience, from our previous work in the meat industry (Andrewartha et al. 1996), that extensive written surveying is inappropriate and that people in this industry respond best to interview-based approaches. Therefore the interview methodology outlined in the Tender Brief was adopted in preference to a written survey approach. We also found that a clear structure for the interview process is required (in our previous work with the meat industry we used a management competencies framework as a structure), and also flexibility within this structure to allow individuals to recount experiences in their own ways.

Draft survey documents

The draft survey documents were formed with this in mind, ensuring that the process had a definite set of elements to investigate, but did not rely on a pedantic, linear approach to inquiry. In the past we have found an elaborated checklist, which the interviewee also holds a copy of, to be useful. In particular in group interviews, where note taking can be difficult (and tape recording can cause suspicion and withdrawal of
involvement), the interviewee can also make notes on the checklist, and hand this to the interviewer afterwards.

3. Trial focus group

The draft survey was trialed with a manager focus group and an employee focus group including representatives invited from red meat (beef and sheep), pork and poultry sectors.

The trial focus group was in three stages:

1. An introductory session at which the context and methodology was described and comments from participants on these broader points discussed.

2. Trial group interviews of the focus groups.

3. Plenary sessions at which participant experiences of the process were discussed.

4. Final survey documents

Changes were made to the survey protocol and forms based on the trial focus group responses and on an evaluation of the effectiveness with which the process used captured the required data. From this a final survey document was produced for ratification by the working party and the independent academic adviser (Professor Winefield).

The final survey protocol

The survey is in three parts:

1. An Organisational Data Record (Appendix 1) form is sent in advance for completion of the first page by the company-nominated administrative officer/manager. An interview is then held with the company-nominated administrative officer/manager to discuss other organisational data (using the Organisational Data Record).

2. A Site Group of Managers is interviewed in two parts—the first using the site group individual record (Safety Culture Survey—Appendix 2) as a focus and the second using five open-ended questions for discussion. This entire group session will be taped for transcription. In addition, participants rate level of agreement with
each statement on their own copy, which is collected for analysis and also the facilitator takes notes.

3. A Site Group of Employees in two parts—the first part using the site group individual record (Safety Culture Survey) as a focus and the second using five open-ended questions for discussion. This entire group session will be taped for transcription. In addition, participants rate level of agreement with each statement on their own copy, which is collected for analysis and also the facilitator takes notes.

**Part 1: Organisational Data Record—1 hour**

This part is an unscripted inquiry seeking factual information relating, in the first part to some basic organisational statistics and, in the second part to company policies, procedures and practices relating to safety. It is anticipated that this should be accomplished in most cases within an hour. The facilitator takes notes of this interview on the Organisational Data Record.

**Part 2: Manager Site Group—1 hour**

There may be in most companies a range of three to six managers attending this session. When all are seated, introduce the project and the survey. Describe the different data collection tools and their purposes. Emphasise the anonymous and confidential treatment of information provided. Commence tape transcription.

Introduce and distribute the Safety Culture Survey. Read each item and draw responses and interpretations from participants. Instruct participants to mark their own individual response to each item after discussion. Guide managers to consider the items from a ‘whole of company’ perspective.

When the Safety Culture Survey is completed and collected, put the five open-ended questions in order, allowing time for discussion of each. Put follow-up questions where appropriate. Participate in the discussion the minimum needed to maintain flow and avoid offering opinion.

The open-ended questions are:

- What does safety mean?
- What happens when concerns about safety are raised?
- What happens when mistakes or accidents happen?
- How is safety spoken about?
• Who is responsible for safety at your workplace?

Thank the group and end the session.

**Part 3: Employee Site Group**

There will be in most companies be a range of four to twelve employees attending this session. When all are seated, introduce the project and the survey. Describe the different data collection tools and their purposes. Emphasise the anonymous and confidential treatment of information provided. Commence tape transcription.

Introduce and distribute the Safety Culture Survey. Read each item and discuss, drawing responses and interpretations from participants. Take care to ensure all participants understand each item, and then instruct participants to mark each item with their own individual response after discussion [using demonstration if needed]. Guide employees to answer from their own experience and perception.

When the Safety Culture Survey is completed and collected, put the five open-ended questions in order, allowing time for discussion of each. Put follow-up questions where appropriate. Participate in the discussion the minimum needed to maintain flow and avoid offering opinion.

Thank the group and end the session.

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**5. Survey design**

The survey was conducted on a company by company basis. This was for a number of reasons:

• Meat plants in regional areas are generally widely distributed, and organising a group of managers from different companies to attend at one site is difficult, given that most of these people (especially in the smaller companies) have operational roles.

• The meat processing industry is highly competitive with small margins and, even though in our experience there is good spirit between companies, most employers are wary of disclosing potentially sensitive information in the presence of competitors.

• The gains to employers of participating come at least in part in benchmarking how they compare to other companies. This comparison will be most meaningful if the survey is done on a company by company basis.
The concept of ‘safety culture’ is built upon a layering of inputs from the organisational, management and employee levels. The objective of an overall safety culture rating is only possible if these are considered together for a company.

The survey plan includes:

- identification of companies to be surveyed
- obtaining endorsement of employers to participate
- negotiation of dates for survey visits to occur
- confirmation of dates prior to commencement.

**Identification of companies and personnel**

A sampling design was constructed, based on sampling 15 companies, across all meat types, with a combination of metropolitan and rural, and small/medium and large. Approximately 190 people was the target to be group interviewed. All companies registered in South Australia with WorkCover Corporation as meat processors were considered.

Our experience is that obtaining agreement to participate is possible but requires persistence. Many companies will not wish to participate, so the strategy was to:

1. Determine the preferred profile of companies (using the sampling design described below). Allocate all companies to appropriate cells.
2. Order companies in each cell using a random number table.
3. Contact employers in each required category in sequence, until the required number of acceptances was achieved.
4. Where a category was exhausted before the required number of acceptances was achieved, re-allocate to another cell, with the approval of the working group.

**Sampling design**

The sampling design in this study is intended only to obtain a properly representative sample overall and does not represent an experimental design for the purposes of statistical analysis. The cell numbers (based on companies per cell) do not support this use. Allocation of companies to the cells of the design was based on obtaining a stratified sample, using percentage of total meat workforce employed in that cell. This percentage
was used to generate a number of companies to sample in each cell. This sampling design is shown in Table 1.

### Table 1. Sampling strategy

<table>
<thead>
<tr>
<th></th>
<th>Small/Medium</th>
<th>Large</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Rural Sample</td>
<td>Metro Sample</td>
</tr>
<tr>
<td><strong>Meat</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee % in cell</td>
<td>7.5% [0.6 metro]</td>
<td>2.6% [all metro]</td>
</tr>
<tr>
<td><strong>Livestock</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee % in cell</td>
<td>4.3% [0.24 metro]</td>
<td>40.1% [0.1 metro]</td>
</tr>
<tr>
<td><strong>Poultry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee % in cell</td>
<td>6.8% [0.8 metro]</td>
<td>15.8% [0.8 metro]</td>
</tr>
<tr>
<td><strong>Pig</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee % in cell</td>
<td>3.8% [0.7 metro]</td>
<td>18.3% [0.8 metro]</td>
</tr>
</tbody>
</table>

Based on the site metro/rural distributions, the metropolitan/rural sampling was weighted to reflect actual distribution (based on employee numbers). Also, in the larger cell, there was a balance of companies with different injury histories. That is, in sampling this cell, prospective companies were filtered for accident record into a Group A and a Group B. At least two companies needed to be surveyed from each of these groups.

### Employer endorsement

Based on our previous meat industry experience, the endorsement by employers to allow staff to participate in the benchmarking exercise is essential. The value to employers of having their safety practices and culture evaluated against peer organisations in a confidential way was emphasised, as was a sharing of results and strategies to minimise the industry’s financial liability and lessening the costs of injury and absenteeism.

A letter to all companies was sent in advance by Paul Sandercock (Executive Director, National Meat Association of Australia (SA)) endorsing participation (Appendix 3). A protocol was followed for phone contacts with individual employers (Appendix 4). After agreement to participate was secured, a survey date and probable personnel were discussed. Also a confirmation letter providing further detail and
clarification was sent (Appendix 5). All appointments were also confirmed by phone in the week prior.

Identification of personnel

The profile of personnel to interview was expected to vary depending on how each company operates and how big it is. In our previous work with this industry, we found that in some large companies there was a designated OHS representative and a more sophisticated HR system, while in others an office administrator (or the plant owner/manager) had full responsibilities for OHS and compensation claims.

Given that this survey is a benchmark of workplace culture in an industry that is undergoing massive change, it was considered important to survey as wide a range of players as possible in each company. As a guide for selecting the employer/manager groups, participation was sought from:

- The owner, chief executive, managing director or general manager.
- The plant manager.
- The person responsible for safety.
- A shift or line supervisor.
- In larger organisations, an administrative manager.

For the employee groups, participation was sought from:

- Employees from each area, including boning room, slaughter floor, packing and distribution and administration.
- Employees from high risk and low risk areas.
- A union representative where appropriate.

Confirmation of dates prior to commencement

Meat industry managers are commonly very busy, and are required to be reactive to events. We found that confirmation of arrangements about five days prior was essential. However even this precaution did not prevent several instances of wasted journeys (as managers had been called away or had forgotten).
Survey visits

The survey process for one company was completed within three hours in most cases.

Variances to Design

Difficulty in gaining commitment from employers to the survey was anticipated, however, the level of difficulty was quite high in some areas. 54 companies were approached in order to achieve the sample.

As a result, two changes to the basic sampling strategy were required. Of the large rural livestock companies available, only four would agree to participate. Five were required in the survey design, and after recalculating the required sampling ratios, use of only four proved to be the best way to preserve the required sample sizes. Therefore the total sample was reduced to 14 companies, with the agreement of the working group. Also, the planned use of a company the Poultry Small/Medium Metropolitan cell became unsustainable when no company in that cell would agree to participate. To maintain the sampling strategy as closely as possible, a company in the Poultry Small/Medium Rural cell was found instead.

In addition, the logistics of coordinating an interview-based survey involving regional areas was significant. Once an employer had agreed for their plant to participate, considerable negotiation needed to occur to agree a suitable time to visit, when both the appropriate personnel and meeting facilities are available. Factors that bore on this included:

- Managers and employees often became unavailable at short notice, as they were required to react to crises.
- Coordinating visits to regional areas was exceptionally difficult, given companies’ availabilities.
- A number of companies (especially smaller ones) were unwilling to release personnel for interviews.

In order to comply with the sampling design within these significant constraints, it was necessary to vary the survey methodology. Where the alternative was withdrawal of participation, allowances were made on occasion to:

- interview individually,
- interview less personnel than the design stipulated, or
- conduct different parts of the survey on different days.
The final number of personnel interviewed was 104. This comprised 45 managers/supervisors and 59 employees. The number of managers interviewed was close to target, but it proved very difficult to have sufficient employees released for interview. The most common reason given for this was production demands.

The level of quantitative data to be collected from companies was quite basic (as can be seen from Appendix 1). However even this proved to be too difficult for many companies. An attempt was made to collect basic company demographics (company employee numbers by age and by length of employment) and basic injury management data (medical treatment injury numbers, lost time injury numbers, compensation cost) from all companies. Even so, in some cases this was not accessible. Although detail of survey participants was provided in some cases, in most cases the arrangements were ad hoc and therefore details were unavailable. This data is not complete enough for analysis.

6. Analysis

Analysis of the data collected is a combination of statistical and qualitative analysis. In particular we were interested to correlate the occurrence of particular cultural elements with statistical information such as injury incidence rates, duration of open claims, repeated claims, clusters of similar injuries, days off work due to injury, and so on. That is, to look for hard and soft data correlates.

Safety Culture Profile

A major output of the project is a safety culture profile for individual companies, constructed from collated company data. This measure is also used as the primary medium for benchmarking safety culture for the industry as a whole.

The Safety Culture Score represents the combined position of the company, taking into account individual employee and manager attitudes, values and practices and organisational policies, procedures and systems that contribute to the way in which safety is approached.

The protocol for arriving at the Safety Culture Score for each company is included as Appendix 6. Each company was scored by two judges, one of whom was the researcher for that facility and the other independent. Inter-rater reliability was assessed to be adequate (using Cronbach’s
alpha), so the averages of two ratings for each company are used in statistical comparisons.

7. Industry consultation

This project was conducted in a highly consultative way, including:

- a monthly progress report to members of the working party,
- meeting with all available members of the working party at the commencement of the project, and monthly thereafter,
- speaking fortnightly with the project manager to liaise on implementation matters, and
- presenting the draft findings to the working party, the Meat Industry OHS Industry Committee and in open forum during Safety Week 2000.

The working party considered and commented on the trial survey script before it was trialed. Similarly, the working party considered the final survey script and methodology before it was implemented.

8. Final report and feedback

Following the acceptance of the Final Report by the industry committee, industry feedback is planned in two forms:

- A specific, individual debriefing to the companies involved. This will address that company’s results against the group benchmark, and will wherever possible be in person to the owner or most senior manager. This discussion will also involve a brief exploration of how the recommendations for change could assist their company.

- A brief report as an accessible summary of the research and recommendations. This would at least be available to participating companies and could be made widely available to the industry.

Where a follow-up visit simply cannot be negotiated, telephone briefing will be substituted. Each company visit would be conducted by the same consultant who conducted the survey at that company.
Outcomes and Findings

Results

1. Data provided by companies

As part of the survey companies were asked to provide demographic data relating to gender ratios, length of employment and age of employees, in addition to a number of injury management statistics for the period July 1999–June 2000. The injury management statistics requested included counts of medical treatment only injuries (less than one day lost time), lost time injuries (greater than one day lost time), reported near misses (incident reports), first aid injuries and time lost per lost time injury claim.

Company sizes

The more detailed demographic breakdowns planned were not possible due to the high levels of missing data in this area. The only reliable statistic used here is overall company size, which is available for all but one of the companies in the survey (albeit an approximation in some cases). The following table contains the company sizes provided by the survey participants. In some cases it was quite difficult for companies to provide precise figures because of the rate of turnover and the casual nature of at least part of the workforce (people who are employed when the demand is high).

Table 2. Sizes of participating companies

<table>
<thead>
<tr>
<th>Company Size</th>
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<tbody>
<tr>
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</tr>
<tr>
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<tr>
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<td>41</td>
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<tr>
<td>409</td>
</tr>
<tr>
<td>598</td>
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</tbody>
</table>
In this analysis company size is primarily used as a controlling variable, to ensure that other data is comparable between companies. However, there is also interest in some basic comparisons of company size as a factor in safety culture. For this purpose, companies have been divided at 100 employees, into Small/Medium and Large.

As a broader point, in examining the companies participating, ability or willingness to provide the data requested is considered of interest. Good management of information is considered to be of importance in creating an effective safety culture. Figure 1 summarises the ability of companies in the survey to provide the information requested.

**Figure 1. Summary of company ability to provide profile data (valid and missing data)**

It is clear from this figure that very few of the companies surveyed demonstrated the capacity to provide injury data broken down by age or length of employment. Regarding the somewhat more complete age and tenure profiles, in a number of cases the data provided are not the direct result of figures provided in writing, but extrapolations and estimates from the personal recollection of the person being interviewed.
Safety data

The following figure illustrates the ratios of valid and missing data for each of the safety data elements.

Figure 2. Valid and missing safety data in the survey sample

It can be seen from this figure that the ability of participating companies to provide the required data varied widely.

The most reliably available safety data (ie collectable from most companies) were total medical treatment injuries (MTI), total lost time injuries (LTI) and total compensation cost (Cost). To make the figures from different sized companies comparable with each other and with other published data, incidence per 1000 employees was calculated for MTI and LTI, and Cost was calculated per employee.

The data collected is summarised in Table 3 below by company size. A visual inspection yields no patterns of safety outcome that relate to company size. This is supported by the correlations (Pearson’s R) shown in Table 4, that indicate no correlations between company size and the safety data items.

This result suggests that company size has no bearing on safety culture.
The significant correlation between MTI/1000 and Cost/employee (R = .747, sig = .033) is of interest in light of the absence of a significant correlation between LTI/1000 and Cost/employee. It suggests a relationship between the overall number of more minor injuries (less than a day lost) and the costliness of claims. This suggests that control of injury costs has more to do with effectively preventing the less serious injuries than with stopping the major injuries.

The correlations between the safety data elements and the overall Safety Culture Scores were not significant—correlations of Safety Culture Score with Total Employees R = .244 (2-tailed Sig. = .401), with MTI/1000 R = -.462 (2-tailed Sig. = .210), with LTI/1000 R = -.313 (2-tailed Sig. = .321) and with Cost/employee R = -.346 (2-tailed Sig. = .297).

Although not significant, the trends of the correlations between Safety Culture Scores and MTI/1000, LTI/1000 and Cost/employee suggest that Safety Culture does have a relationship to good injury management outcomes.

Table 3. Summary of safety data by company

<table>
<thead>
<tr>
<th>Company</th>
<th>Total Employees</th>
<th>MTI per 1000</th>
<th>LTI per 1000</th>
<th>Cost per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>62.50</td>
<td>187.50</td>
<td>500.00</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>55.56</td>
<td>55.56</td>
<td>7.67</td>
</tr>
<tr>
<td>3</td>
<td>41</td>
<td>N/A</td>
<td>341.46</td>
<td>295.61</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>55</td>
<td>90.91</td>
<td>.00</td>
<td>218.18</td>
</tr>
<tr>
<td>6</td>
<td>56</td>
<td>142.86</td>
<td>71.43</td>
<td>84.66</td>
</tr>
<tr>
<td>7</td>
<td>81</td>
<td>111.11</td>
<td>98.77</td>
<td>128.37</td>
</tr>
<tr>
<td>8</td>
<td>110</td>
<td>N/A</td>
<td>27.27</td>
<td>1654.55</td>
</tr>
<tr>
<td>9</td>
<td>120</td>
<td>308.33</td>
<td>91.67</td>
<td>62.34</td>
</tr>
<tr>
<td>10</td>
<td>133</td>
<td>526.32</td>
<td>383.46</td>
<td>2105.26</td>
</tr>
<tr>
<td>11</td>
<td>223</td>
<td>304.93</td>
<td>98.65</td>
<td>218.50</td>
</tr>
<tr>
<td>12</td>
<td>409</td>
<td>56.23</td>
<td>268.95</td>
<td>N/A</td>
</tr>
<tr>
<td>13</td>
<td>598</td>
<td>N/A</td>
<td>277.59</td>
<td>225.38</td>
</tr>
<tr>
<td>14</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Table 4. Correlations: Safety data and company size (total employees)

<table>
<thead>
<tr>
<th></th>
<th>Medical Treat Injury Rate per 1000</th>
<th>Lost Time Injury Rate per 1000</th>
<th>Cost of claims per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Employees</td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.106</td>
<td>.390</td>
<td>-.022</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.786</td>
<td>.210</td>
<td>.950</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Treat Injury Rate per 1000</td>
<td>Pearson Correlation</td>
<td>.512</td>
<td>.747 *</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.159</td>
<td></td>
<td>.033</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Lost Time Injury Rate per 1000</td>
<td>Pearson Correlation</td>
<td>.370</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.262</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

2. WorkCover provided data

Summary data of the performance of the industry as whole in South Australia was obtained from WorkCover Corporation records, in order to establish a benchmark from which to compare the performance of the sample group. Also some additional detail has been collated at the industry level (than was available from individual companies in the sample) in order to provide some further interpretive depth.

The main points of comparison illustrated in Table 5 are incidence and cost of injury claims. These are broken down by:

- industry sub-sector (the most directly comparable data with the survey company data),
- mechanism of injury, and
- agency of injury.

Table 5. Industry claims and costs per claim (1999/2000)

<table>
<thead>
<tr>
<th>Industry Sub-sector</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>157</td>
<td>1,008</td>
</tr>
<tr>
<td>Livestock</td>
<td>959</td>
<td>901</td>
</tr>
<tr>
<td>Poultry</td>
<td>100</td>
<td>970</td>
</tr>
<tr>
<td>Bacon/ham/smallgoods</td>
<td>163</td>
<td>986</td>
</tr>
<tr>
<td>Total</td>
<td>1379</td>
<td>966</td>
</tr>
</tbody>
</table>
Mechanisms by number of claims and cost per claim (98/99)

Table 6. Mechanism of injury (all claims) 1998/1999

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitting moving object</td>
<td>342</td>
<td>975</td>
</tr>
<tr>
<td>Muscle stress (handling)</td>
<td>247</td>
<td>4,071</td>
</tr>
<tr>
<td>Muscle stress (carrying)</td>
<td>158</td>
<td>4,608</td>
</tr>
<tr>
<td>Fall (same level)</td>
<td>94</td>
<td>3,871</td>
</tr>
<tr>
<td>Hit by moving/falling object</td>
<td>15</td>
<td>1,129</td>
</tr>
<tr>
<td>Hitting stationary object</td>
<td>75</td>
<td>834</td>
</tr>
<tr>
<td>Repetition strains</td>
<td>72</td>
<td>6,827</td>
</tr>
</tbody>
</table>

In Table 6 above, ‘Hitting moving object’ refers predominantly to knife cuts, which are clearly frequent but mostly minor injuries, with a low cost per claim. In terms of the combination of frequency and cost, muscle stresses are also important injury types to focus on. Biological hazards (43) and chemical hazards (35) are minor causes of injury and do not represent areas requiring concentration. As a point of further comparison, the number of claims with greater than 10 days lost are also considered (Table 7).

Table 7. Mechanism of injury (GT10 days) 1998/1999

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle stress (handling)</td>
<td>21</td>
<td>12,383</td>
</tr>
<tr>
<td>Muscle stress (carrying)</td>
<td>18</td>
<td>16,454</td>
</tr>
<tr>
<td>Repetition strains</td>
<td>10</td>
<td>9,023</td>
</tr>
<tr>
<td>Fall (same level)</td>
<td>9</td>
<td>20,941</td>
</tr>
<tr>
<td>Hitting moving object</td>
<td>9</td>
<td>12,595</td>
</tr>
</tbody>
</table>

‘Hitting moving object’ claims requiring greater than 10 days off work are only 2.6% of the total ‘Hitting moving object’ claims.

Agency of injury by number of claims and cost per claim (96/99)

Table 8. Agency of injury 1996-1999

<table>
<thead>
<tr>
<th>Agency</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
<th>Number of claims</th>
<th>Average cost of claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knives and cutlery</td>
<td>524</td>
<td>768</td>
<td>87</td>
<td>600</td>
<td>27</td>
<td>2,276</td>
</tr>
<tr>
<td>Power tools (eg saws)</td>
<td>45</td>
<td>5,760</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Boxes, crates, barrels</td>
<td>—</td>
<td>—</td>
<td>16</td>
<td>678</td>
<td>16</td>
<td>2,043</td>
</tr>
<tr>
<td>Other</td>
<td>572</td>
<td>3,367</td>
<td>159</td>
<td>2,078</td>
<td>73</td>
<td>5,235</td>
</tr>
</tbody>
</table>
Knife-related injuries, as inferred from Table 8 above, are clearly frequent. However, they are usually not serious injuries (as reflected in the lower costs per claim). The exception is the Poultry sub-sector. While the number of knife-related claims is not high, the cost per claim is. In fact, generally, the number of claims in the Poultry sector is not high, but the cost of claims is high.

From a safety culture perspective, this could reflect a degree of employee disaffection with their employers (resulting in less motivation to return quickly to work).

**Comparisons with sample data**

This comparison was complicated by the pattern of missing data from the survey companies. As a result, a comparison has been calculated for both cost per LTI claim and cost per LTI/MTI claim. Also the average number of claims per company in the industry data has been estimated using the number of claims and the list of companies in each sector provided for sampling.

The industry figures are summarised in Table 9 and the sample figures in Table 10.

**Table 9. SA industry claims and cost per claim**

<table>
<thead>
<tr>
<th>Industry Sub-sector</th>
<th>Number of claims</th>
<th>Average claims per company</th>
<th>Average cost of claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>157</td>
<td>4.6</td>
<td>1,008</td>
</tr>
<tr>
<td>Livestock</td>
<td>959</td>
<td>29</td>
<td>901</td>
</tr>
<tr>
<td>Poultry</td>
<td>100</td>
<td>2.7</td>
<td>970</td>
</tr>
<tr>
<td>Bacon/smallgoods</td>
<td>163</td>
<td>5.8</td>
<td>986</td>
</tr>
<tr>
<td>Total</td>
<td>1379</td>
<td>10.4</td>
<td>966</td>
</tr>
</tbody>
</table>

**Table 10. Survey sample claims and cost per claim**

<table>
<thead>
<tr>
<th>Number of LTI + MTI claims</th>
<th>Cost/LTI-MTI claim</th>
<th>Number of LTI claims</th>
<th>Cost/LTI claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>69</td>
<td>1</td>
<td>138</td>
</tr>
<tr>
<td>4</td>
<td>2000</td>
<td>3</td>
<td>2667</td>
</tr>
<tr>
<td>—</td>
<td>—</td>
<td>3</td>
<td>60667</td>
</tr>
<tr>
<td>12</td>
<td>395</td>
<td>4</td>
<td>1185</td>
</tr>
<tr>
<td>17</td>
<td>612</td>
<td>8</td>
<td>1299</td>
</tr>
<tr>
<td>23</td>
<td>522</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>48</td>
<td>156</td>
<td>11</td>
<td>680</td>
</tr>
<tr>
<td>—</td>
<td>—</td>
<td>14</td>
<td>865</td>
</tr>
<tr>
<td>90</td>
<td>541</td>
<td>22</td>
<td>2214</td>
</tr>
<tr>
<td>121</td>
<td>2314</td>
<td>51</td>
<td>5490</td>
</tr>
<tr>
<td>—</td>
<td>—</td>
<td>166</td>
<td>811</td>
</tr>
</tbody>
</table>
The industry average claims per company is 10.4 on this estimate, and the industry average cost of claims is $966. Comparing these with the sample, most companies are within the range of claims expected of the industry. Two companies have high levels of claims. In terms of cost of claims, about half the sample matches or does better than the industry average (including one of the companies with a high incidence rate—suggesting a larger number of less serious injuries, or a culture better at getting people back to work quickly). However, the other company with a high incidence rate also has expensive claims—suggesting either an excess of serious injuries or a culture that is not working well. The very high cost per claim (with only three claims for the period) is mostly due to a single fall from height that occurred off-site (a driver) and is therefore not typical of the meat industry picture.

3. Safety culture scores

The Safety Culture Score is in many respects the centrepiece of this study. A primary objective of this study is to determine a measure that both represents the complexity of safety culture and can be calculated reliably for any meat industry company. The protocol devised for calculating a Safety Culture Score for each company is shown in Appendix 6. The underpinning of this protocol is that safety culture represents the integrated position of the company, taking into account individual employee and manager attitudes, values and practices and organisational policies, procedures and systems that contribute to the way in which safety is approached.

Inter-judge reliability

A crucial test to perform on the Safety Culture Score is of its integrity as a scale. This is done using reliability measures.

Firstly, Judge 1 / Judge 2 reliability was measured using Cronbach’s Alpha, Guttman’s Split-half Test and the Parallel Estimate of Reliability. The results shown in Table 11 indicate acceptable inter-judge reliability.

<table>
<thead>
<tr>
<th>Reliability Measure</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
<td>.908</td>
</tr>
<tr>
<td>Guttman’s Split-half Test</td>
<td>.908</td>
</tr>
<tr>
<td>Parallel Estimate of Reliability</td>
<td>.922</td>
</tr>
</tbody>
</table>

The inter-judge correlation (Pearson’s R) = 0.870, which is a significant correlation at the .001 level.
Scale item reliability

It is also important to establish the reliability of the scale in terms of the 12 items comprising it. These reliability results are shown in Table 12 and indicate that the scale reliability is very high.

<table>
<thead>
<tr>
<th>Reliability Measure</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
<td>.964</td>
</tr>
<tr>
<td>Guttman’s Split-half Test</td>
<td>.958</td>
</tr>
<tr>
<td>Parallel Estimate of Reliability</td>
<td>.969</td>
</tr>
</tbody>
</table>

Table 12: Scale item reliability

Regression

As a final test of the relationship between the judge ratings, a regression analysis was performed. The results of this regression are shown in Table 13.

<table>
<thead>
<tr>
<th>Regression Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>(Constant)</td>
</tr>
<tr>
<td>Safety Culture Rating: Rater 2</td>
</tr>
</tbody>
</table>

The regression model described in this table is illustrated in the figure below (Figure 3). This evidence, combined with the correlation and reliability data, supports a high level of congruence between judges and allows judger ratings to be combined safely.

Figure 3. Scattergram illustrating the correlation between raters
Component scores

Individual components that comprise the Safety Culture Score were summed across the two judges to yield a score for each component with a minimum of 0 and a maximum of 16. These component scores are shown in Figure 4. The centre point of each line is the mean value of all companies for that component, and the ends are the lowest and highest scores by a company.

As can be seen from the figure, there is a large variability on all items across companies. This is of concern, as it is a higher level of consistency across the industry that will result in overall improvement in safety culture and safety outcomes.

‘A strong focus on safety’ is the most consistently well rated item (as determined by the mean value) and ‘Good organisational learning’ ‘Management style which is democratic’ and ‘High job satisfaction’ are the most consistently low rated items.

Figure 4. Safety Culture Score item component scores and ranges
Benchmark Safety Culture Scores

The Safety Culture Scores for each company in the sample are shown as a benchmark comparison in Figure 5.

Figure 5. Benchmark Safety Culture Scores for survey sample

Each bar represents one of the participating companies—red bars represent the companies designated small/medium and blue bars represent the large companies in the sample. It can be seen from Figure 5 that company size bears no relationship to safety culture score. Interestingly, the survey sample splits equally on companies scoring above and below the baseline of 48—the point that represents the score a company achieves if it get an ‘acceptable’ rating for every aspect of every component. Companies below this line scored were judged ‘unacceptable’ in at least some aspects of safety culture.

The maximum score achievable is 96, therefore all companies have a lot of room for improvement. The companies at the lower end are in need of some safety culture remediation.
A T-test was used to compare the high scoring group (over 48) with the low scoring group on the variables of safety performance (LTI, MTI, Cost, LTI/1000, MTI/1000 and Cost/employee). None of the comparisons showed a significant difference between the groups. A series of scatterplots examine the relationship between safety performance and safety culture score (divided into low, mid-range and high scoring companies). These are shown in Figures 6 to 9.

Figure 6. Scatterplot of LTI Claims for Safety Culture Score Groups

Group 1 score up to 40, Group 2 score between 40 and 57 and Group 3 score over 57 on the Safety Culture Score. The number of LTI claims is strongly linked to company size (although LTI rate—LTI/1000—is not, as reported on page 17), and as large and small companies are evenly distributed across the range of Safety Culture Scores, it is not surprising that there is a high LTI score in each group. Of more interest is that the number of LTI claims are greatest for a company with a high Safety Culture Score. However, until this statistic is controlled for company size interpretation is of limited value.

Figure 7 presents LTI claims controlled for company size by presenting LTI claims per 1000 employees. When this is done an examination of the distribution shows a trend for higher scoring companies to have lower LTI/1000. The variance in each group is clearly too great to allow any statistically significant effect, however it does support the value of the Safety Culture Score as an indicator of safety performance.
Figure 7. Scatterplot of LTI/1000 for Safety Culture Score Groups

Figure 8 examines the relationship of cost of claims with safety culture. This is an interesting view in terms of safety culture, as it would tend to reflect the ability of companies to return workers to work in effective ways. In this view, unfortunately, any real effects are clearly masked by the abnormal result for one company. This result is traced back to one claim that occurred in a transport context, not in a meat processing facility but involving a driver who fell from a height. For this employer this was one of three LTI claims for the year but represented over 90% of the total claims cost. Looking at the results for the other companies, there appears to be no real difference between Groups 2 and 3, but some greater level of costs in Group 1. Again, this view provides modest support for the value of the Safety Culture Score in predicting safety performance.

Figure 8. Scatterplot of Cost/LTI claim for Safety Culture Score Groups
Cost can also be examined in terms of cost per employee, which looks at overall cost of claims, controlling for company size (Figure 9). In this view Group 3 have a real advantage in consistency, but there are certainly companies from the other groups that perform as well. No high culture score companies have cost blow-outs. Some companies in the mid-range and low culture score groups have blow-outs, but also other companies have low costs.

A reasonable reading of this, especially given the quite low LTI rates in the smaller companies, is that poor safety culture will not necessarily result in high costs in a given year, but it will make poor safety culture companies more vulnerable to high costs. Good safety culture companies are very unlikely to have high costs (perhaps because of better mechanisms for returning injured employees to work).

**Figure 9. Scatterplot of Cost/employee for Safety Culture Score Groups**

![Figure 9](budleafnw/budleafnw/budleafnw)

**Comparisons with ‘quality of data provided’**

One hypothesis drawn from the literature is that a good capacity to manage (store, retrieve and analyse) information is an indicator of good safety culture and also of a safer workplace. This indication was also apparent in a previous study of meat industry management competencies (Andrewartha et al. 1996). Table 14 shows the correlation values (Pearson’s R) between the number of missing data elements and the summary safety measures.

There is a significant correlation between data quality (number of missing elements) and cost per LTI claim. There are weak correlations (not statistically significant) between data quality and MTI/1000 and Cost/employee. This cluster of correlations suggests modest support for the hypothesis that good information management is related to good injury record. There is no correlation between data quality and LTI/1000.
This combination of correlations suggests that good information management (as estimated in this instance by data quality) will not necessarily impact upon the number of claims occurring (LTI/1000), but will impact positively upon how effectively claims are managed (cost per LTI claim).

### Table 14. Correlations of Number of missing data elements with safety record

<table>
<thead>
<tr>
<th></th>
<th>MTI / 1000</th>
<th>LTI / 1000</th>
<th>Cost per employee</th>
<th>Safety Culture Score</th>
<th>cost per LTI claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>.453</td>
<td>.049</td>
<td>.448</td>
<td>-.371</td>
<td>.630</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.221</td>
<td>.879</td>
<td>.167</td>
<td>.192</td>
<td>.05</td>
</tr>
<tr>
<td>N</td>
<td>9</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td>10</td>
</tr>
</tbody>
</table>

### Comparisons with survey item averages

The overall Average Safety Culture Score correlates with a number of the employee and manager rated items, as shown in Table 15.

### Table 15. Correlations with Safety Culture Score (N=14)

<table>
<thead>
<tr>
<th>Rated item</th>
<th>Pearson R</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company communication is good</td>
<td>.695</td>
<td>.006</td>
</tr>
<tr>
<td>Employees are encouraged to talk</td>
<td>.534</td>
<td>.049</td>
</tr>
<tr>
<td>A good system for reporting problems</td>
<td>.420</td>
<td>.134</td>
</tr>
<tr>
<td>Safety improvements don't get put off</td>
<td>.424</td>
<td>.131</td>
</tr>
<tr>
<td>My job is clear</td>
<td>.558</td>
<td>.038</td>
</tr>
<tr>
<td>Management acts in a positive and open way</td>
<td>.450</td>
<td>.107</td>
</tr>
<tr>
<td>Company treats safety mistakes fairly</td>
<td>.495</td>
<td>.072</td>
</tr>
<tr>
<td>I am aware of the risks and hazards</td>
<td>.150</td>
<td>.608</td>
</tr>
<tr>
<td>I control how safe my work is for me</td>
<td>.240</td>
<td>.409</td>
</tr>
<tr>
<td>People are careful to work safely here</td>
<td>.465</td>
<td>.094</td>
</tr>
<tr>
<td>Company works to prevent accidents</td>
<td>.622</td>
<td>.018</td>
</tr>
<tr>
<td>We are not expected to do what we’re told</td>
<td>.315</td>
<td>.273</td>
</tr>
<tr>
<td>Supervisors are committed to safety</td>
<td>.381</td>
<td>.178</td>
</tr>
<tr>
<td>Managers are committed to safety</td>
<td>.358</td>
<td>.208</td>
</tr>
<tr>
<td>Safety rules are clear</td>
<td>.393</td>
<td>.164</td>
</tr>
<tr>
<td>Safety systems are effective</td>
<td>.496</td>
<td>.071</td>
</tr>
<tr>
<td>I am kept well informed on safety</td>
<td>.405</td>
<td>.151</td>
</tr>
<tr>
<td>This is a good place to work</td>
<td>.484</td>
<td>.080</td>
</tr>
<tr>
<td>I am happy in my job</td>
<td>.508</td>
<td>.064</td>
</tr>
<tr>
<td>Employees are encouraged to contribute</td>
<td>.664</td>
<td>.010</td>
</tr>
<tr>
<td>OH&amp;S training is effective</td>
<td>.575</td>
<td>.031</td>
</tr>
<tr>
<td>Safety is more important than production</td>
<td>.478</td>
<td>.084</td>
</tr>
<tr>
<td>Sometimes necessary to break safety rules?</td>
<td>.301</td>
<td>.296</td>
</tr>
</tbody>
</table>
Items marked blue indicate items with which the Average Safety Culture Score correlates significantly (at the .05 level). These items may represent key connections with safety culture:

- Company communication is good
- Employees are encouraged to talk
- My job is clear
- Company works to prevent accidents
- Employees are encouraged to contribute
- OH&S training is effective

Of some interest are the very low correlations of Safety Score with the items, ‘I am aware of the risks and hazards’ and ‘I control how safe my work is for me.’ This appears to be mostly due to the near-universality of ratings on these two items. It seems that almost all employees and managers surveyed perceive that they are aware of the risks and hazards in their work, and that they control their personal work safety practices. This denotes a level of personal confidence in working safely. Whether this level of confidence is warranted or based on insufficient caution is not clear. Certainly, Reason (1997, 195) argues strongly for the need for ‘not forgetting to be afraid’.

Individual Safety Culture Score components are assessed for relationship with employee survey response items using a factor analysis. This is reported in Table 19.

### 4. Survey response items

#### Descriptive data

The response pattern for each statement is shown in Table 16. The rating given by the largest number of people (the modal value) for each statement has been made red to reflect more clearly the broad trends of response.

It is clear from the pattern of modal responses that the responses are generally positive—most people interviewed perceived their companies in a positive light.
Table 16. Distribution of responses to survey statements

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never true</th>
<th>Usually not true</th>
<th>Not sure</th>
<th>Usually true</th>
<th>Always true</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company communication is good</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>69</td>
<td>13</td>
</tr>
<tr>
<td>Employees are encouraged to talk</td>
<td>4</td>
<td>12</td>
<td>11</td>
<td>46</td>
<td>31</td>
</tr>
<tr>
<td>A good system for reporting problems</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>48</td>
<td>34</td>
</tr>
<tr>
<td>Safety improvements don’t get put off</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>39</td>
<td>23</td>
</tr>
<tr>
<td>My job is clear</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>28</td>
<td>72</td>
</tr>
<tr>
<td>Management acts in a positive and open way</td>
<td>4</td>
<td>7</td>
<td>14</td>
<td>48</td>
<td>31</td>
</tr>
<tr>
<td>Company treats safety mistakes fairly</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>I am aware of the risks and hazards</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>28</td>
<td>72</td>
</tr>
<tr>
<td>I control how safe my work is for me</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>33</td>
<td>66</td>
</tr>
<tr>
<td>People are careful to work safely here</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>68</td>
<td>19</td>
</tr>
<tr>
<td>Company works to prevent accidents</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>41</td>
<td>49</td>
</tr>
<tr>
<td>We are not expected to do what we’re told regardless</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>22</td>
<td>60</td>
</tr>
<tr>
<td>Supervisors are committed to safety</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>41</td>
<td>51</td>
</tr>
<tr>
<td>Managers are committed to safety</td>
<td>2</td>
<td>1</td>
<td>14</td>
<td>30</td>
<td>57</td>
</tr>
<tr>
<td>Safety systems are effective</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>33</td>
<td>51</td>
</tr>
<tr>
<td>I am kept well informed on safety</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>This is a good place to work</td>
<td>9</td>
<td>6</td>
<td>8</td>
<td>45</td>
<td>34</td>
</tr>
<tr>
<td>I am happy in my job</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>46</td>
<td>39</td>
</tr>
<tr>
<td>Employees are encouraged to contribute</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>OH&amp;S training is effective</td>
<td>3</td>
<td>1</td>
<td>13</td>
<td>55</td>
<td>32</td>
</tr>
<tr>
<td>Safety is more important than production</td>
<td>8</td>
<td>15</td>
<td>13</td>
<td>34</td>
<td>33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>False</th>
<th>Not sure</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>14</td>
<td>46</td>
</tr>
</tbody>
</table>

The strongly positive pattern is weaker in the statements marked blue. The ‘blue’ statements appear to reflect a degree to which employees do not feel involved in company processes—‘Employees are (not) encouraged to contribute’, ‘We are expected to do what we’re told regardless’, ‘Company communication is (not) good’, ‘Employees are (not) encouraged to talk’ and ‘Management (does not act) in a positive and open way’.

In particular there is a quite broad perception that safety improvements do get put off, and breaking (or seriously bending) of safety rules is widely considered necessary, in order ‘to get the job done’. There is also some breadth of support for the perception that safety is less important than production.
## Comparisons

Table 17 shows the results of an analysis of variance (ANOVA, Statistical Package for Social Sciences) examining differences between companies on the ratings assigned by employees and managers. These figures suggest that there are significant differences between companies on most statements. The statements where there is no difference (suggesting a uniform perception across companies) are:

- I am aware of the risks and hazards
- I control how safe my work is for me
- Safety rules are clear
- It is never necessary to break safety rules (the question asked was ‘Is it ever necessary to break safety rules?’—the sense has been reversed for consistency of analysis)

This cluster suggests two things. Firstly, there appears to be a completely uniform awareness and understanding of safe working practices and of hazards across the industry.

Secondly, there is a consistent belief across the industry that breaking safety rules happens and is necessary.

### Table 17. ANOVA comparison between companies (df=13, 90)

<table>
<thead>
<tr>
<th>Statement</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company communication is good</td>
<td>4.833</td>
<td>.000</td>
</tr>
<tr>
<td>Employees are encouraged to talk</td>
<td>4.106</td>
<td>.000</td>
</tr>
<tr>
<td>A good system for reporting problems</td>
<td>4.270</td>
<td>.000</td>
</tr>
<tr>
<td>Safety improvements don’t get put off</td>
<td>3.759</td>
<td>.000</td>
</tr>
<tr>
<td>My job is clear</td>
<td>2.392</td>
<td>.008</td>
</tr>
<tr>
<td>Management acts in a positive and open way</td>
<td>4.235</td>
<td>.000</td>
</tr>
<tr>
<td>Company treats safety mistakes fairly</td>
<td>3.282</td>
<td>.000</td>
</tr>
<tr>
<td>I am aware of the risks and hazards</td>
<td>1.734</td>
<td>.067</td>
</tr>
<tr>
<td>I control how safe my work is for me</td>
<td>1.553</td>
<td>.114</td>
</tr>
<tr>
<td>People are careful to work safely here</td>
<td>2.903</td>
<td>.002</td>
</tr>
<tr>
<td>Company works to prevent accidents</td>
<td>5.067</td>
<td>.000</td>
</tr>
<tr>
<td>We are not expected to do what we’re told regardless</td>
<td>5.298</td>
<td>.000</td>
</tr>
<tr>
<td>Supervisors are committed to safety</td>
<td>2.386</td>
<td>.008</td>
</tr>
<tr>
<td>Managers are committed to safety</td>
<td>3.686</td>
<td>.000</td>
</tr>
<tr>
<td>Safety rules are clear</td>
<td>1.666</td>
<td>.082</td>
</tr>
<tr>
<td>Safety systems are effective</td>
<td>5.083</td>
<td>.000</td>
</tr>
<tr>
<td>I am kept well informed on safety</td>
<td>2.171</td>
<td>.017</td>
</tr>
<tr>
<td>This is a good place to work</td>
<td>3.950</td>
<td>.000</td>
</tr>
<tr>
<td>I am happy in my job</td>
<td>4.934</td>
<td>.000</td>
</tr>
<tr>
<td>Employees are encouraged to contribute</td>
<td>7.673</td>
<td>.000</td>
</tr>
<tr>
<td>OH&amp;S training is effective</td>
<td>5.261</td>
<td>.000</td>
</tr>
<tr>
<td>Safety is more important than production</td>
<td>5.253</td>
<td>.000</td>
</tr>
<tr>
<td>Never necessary to break safety rules</td>
<td>1.370</td>
<td>.190</td>
</tr>
</tbody>
</table>
This analysis of variance was repeated separately for the employee responses and for manager responses. When only employees’ ratings are analysed, only four comparisons (‘I am aware of the risks and hazards’, ‘Supervisors are committed to safety’, ‘Safety rules are clear’ and ‘I am kept well informed on safety’) show no differences between companies. That is, on these four statements employee perceptions were uniform across the sample. On all the other statements there were differences between companies.

When only managers’ ratings are included, eleven statements show no differences between companies. These are:

- A good system for reporting problems
- My job is clear
- Management acts in a positive and open way
- Company treats safety mistakes fairly
- I control how safe my work is for me
- People are careful to work safely here
- Company works to prevent accidents
- Supervisors are committed to safety
- Managers are committed to safety
- Safety rules are clear
- I am kept well informed on safety

An interpretation of this difference in pattern is that managers across the industry are much more uniform in their perceptions of organisational safety matters than are employees.

Managers are more uniformly likely to perceive that safety is being handled well. To explore this possibility further, a comparison between employees and managers on the statements is shown in Figure 10 and Table 18.

It can be seen from Figure 10 that whereas on some statements manager and employee perceptions are very similar, for example, ‘My job is clear’, I am aware of the risk and hazards’ and ‘My supervisor is committed to safety’. However, there appear to be differences in perception between managers and employees in other areas, such as, ‘Safety improvements don’t get put off’, ‘Employees are encouraged to talk’, ‘Management acts in a positive and open way’, ‘The company treats safety mistakes and errors fairly’ and ‘We’re not expected to do what we are told regardless’. 
The significance of these apparent differences are tested with t-tests, as shown in Table 18. The statements for which there is a significant difference between employee and manager ratings are marked as red. In all cases the manager mean is the greater (signifying a more positive rating). The statements for which there is significant difference between manager and employee ratings appear to reflect three themes:

- Managers perceive a more open, encouraging management approach to involving employees in safety thinking.
Managers perceive a more genuine, active management commitment to safety improvement.

Managers perceive more positive workplace conditions and morale.

The main theme on which there is general agreement between managers and employees is employee understanding of how to work safely.

### Table 18. Independent Samples Test for Equality of Means (employees and managers)

<table>
<thead>
<tr>
<th>Item</th>
<th>employees</th>
<th>managers</th>
<th>t-test (df=102)</th>
<th>Sig. (2-tail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company communication is good</td>
<td>2.52</td>
<td>2.98</td>
<td>-2.411</td>
<td>.018</td>
</tr>
<tr>
<td>Employees are encouraged to talk</td>
<td>2.47</td>
<td>3.33</td>
<td>-4.282</td>
<td>.000</td>
</tr>
<tr>
<td>A good system for reporting problems</td>
<td>2.79</td>
<td>3.29</td>
<td>-2.693</td>
<td>.008</td>
</tr>
<tr>
<td>Safety improvements don’t get put off</td>
<td>2.13</td>
<td>2.82</td>
<td>-2.724</td>
<td>.008</td>
</tr>
<tr>
<td>My job is clear</td>
<td>3.64</td>
<td>3.62</td>
<td>.176</td>
<td>.861</td>
</tr>
<tr>
<td>Management acts in a positive and open way</td>
<td>2.47</td>
<td>3.49</td>
<td>-5.717</td>
<td>.000</td>
</tr>
<tr>
<td>Company treats safety mistakes fairly</td>
<td>2.72</td>
<td>3.49</td>
<td>-3.900</td>
<td>.000</td>
</tr>
<tr>
<td>I am aware of the risks and hazards</td>
<td>3.63</td>
<td>3.66</td>
<td>.232</td>
<td>.817</td>
</tr>
<tr>
<td>I control how safe my work is for me</td>
<td>3.61</td>
<td>3.51</td>
<td>.768</td>
<td>.444</td>
</tr>
<tr>
<td>People are careful to work safely here</td>
<td>2.79</td>
<td>3.06</td>
<td>-1.643</td>
<td>.103</td>
</tr>
<tr>
<td>Company works to prevent accidents</td>
<td>3.00</td>
<td>3.62</td>
<td>-3.779</td>
<td>.000</td>
</tr>
<tr>
<td>We are not expected to do what we’re told regardless</td>
<td>2.71</td>
<td>3.71</td>
<td>-4.320</td>
<td>.000</td>
</tr>
<tr>
<td>Supervisors are committed to safety</td>
<td>3.32</td>
<td>3.33</td>
<td>-.068</td>
<td>.946</td>
</tr>
<tr>
<td>Managers are committed to safety</td>
<td>3.03</td>
<td>3.73</td>
<td>-4.305</td>
<td>.000</td>
</tr>
<tr>
<td>Safety rules are clear</td>
<td>3.25</td>
<td>3.29</td>
<td>-.238</td>
<td>.812</td>
</tr>
<tr>
<td>Safety systems are effective</td>
<td>3.15</td>
<td>3.15</td>
<td>-.014</td>
<td>.989</td>
</tr>
<tr>
<td>I am kept well informed on safety</td>
<td>3.08</td>
<td>3.48</td>
<td>-2.474</td>
<td>.015</td>
</tr>
<tr>
<td>This is a good place to work</td>
<td>2.52</td>
<td>3.34</td>
<td>-3.623</td>
<td>.000</td>
</tr>
<tr>
<td>I am happy in my job</td>
<td>2.93</td>
<td>3.31</td>
<td>-2.034</td>
<td>.045</td>
</tr>
<tr>
<td>Employees are encouraged to contribute</td>
<td>2.78</td>
<td>3.08</td>
<td>-1.321</td>
<td>.189</td>
</tr>
<tr>
<td>OH&amp;S training is effective</td>
<td>2.98</td>
<td>3.20</td>
<td>-1.285</td>
<td>.202</td>
</tr>
<tr>
<td>Safety is more important than production</td>
<td>2.42</td>
<td>3.00</td>
<td>-2.310</td>
<td>.023</td>
</tr>
<tr>
<td>Never necessary to break safety rules</td>
<td>1.93</td>
<td>2.22</td>
<td>-.784</td>
<td>.435</td>
</tr>
</tbody>
</table>

### Factor analysis results

A factor analysis of the patterns of correlations between safety culture variables in the study was undertaken to identify any underlying attributes (such as attitudes, values or beliefs) of safety culture. This is often done to simplify the interpretation of a large number of variables.

The factor analysis was performed on the combined sets of employee/manager rated items and judge rated items, using Principal Components Analysis and Varimax rotation with Kaiser Normalization.
This analysis yields seven factors that may represent identifiable attitudes or attributes of companies or their employees. The standard adopted for inclusion in the factors listed below is a factor loading greater than .600. The only exception to this is one statement included in Factor 5.

Factor 1 consists of the majority of the judged safety culture score elements, suggesting these do indeed represent a coherent group. The statements included in Factor 1 (listed below with their associated factor loadings) match closely to the elements identified in the literature as important in a safety culture. We have therefore labelled Factor 1 Safety culture:

- A high level of communication .934
- Good organisational learning .755
- A strong focus on safety .756
- A senior management that is strongly committed to safety .837
- A management leadership style that is democratic .835
- More and better quality training .798
- Clean and comfortable working conditions .751
- High job satisfaction .876
- An informed respect for hazards .872
- A just response to mistakes or violations .605
- A flexible response to incidents .877

‘Employees recruited with safety in mind’ (factor loading .473) is excluded from this group as not loading strongly and would be excluded from any future safety culture scale.

Factor 2 is also a strong cluster of safety indicators concentrating on company commitment to safety and to engaging employees in safety management. Because of this, Factor 2 is labelled Safety engagement:

- Company communication is good .705
- Employees are encouraged to talk .682
- A good system for reporting problems .852
- Management acts in a positive and open way .821
- Company treats safety mistakes fairly .826
- People are careful to work safely here .606
- Company works to prevent accidents .700
- We are not expected to do what we’re told regardless .746
- Supervisors are committed to safety .655
- Managers are committed to safety .836
- Safety is more important than production .618
Factor 3 is also a strong cluster that appears to have a clear focus on safety ‘on the floor’. The statements loading well on this factor seem to relate to employee belief that the company is ‘doing the right thing’ by them. We have therefore labelled Factor 3 Application of safety:

- Employees recruited with safety in mind .768
- Safety improvements don’t get put off .825
- My job is clear .682
- Safety systems are effective .663
- This is a good place to work .885
- I am happy in my job .848
- OH&S training is effective .766

It is interesting that OH&S training loaded strongly on Factor 3 but weakly on Factor 4 (where it might have been expected to correlate). This appears to suggest that OH&S training is seen more as an indicator of a positive company attitude than as a real contributor to safety knowledge.

Factor 4 has a focus on Procedural safety:

- Safety rules are clear .768
- I am kept well informed on safety .674

Factor 5 has a focus on Employee control of safety:

- I control how safe my work is for me .911
- Employees are encouraged to contribute .583

In reality, ‘Employees are encouraged to contribute to safety policy and procedures’ is a weak contributor to any of the factors. It could also be excluded from Factor 5. In fact, it loads .538 to Factor 3, suggesting that this statement also reflects, to a lesser degree, a sense that employees who are encouraged to contribute feel more that the company is trying to do the right things.
Factor 6 contains the only negative relationship, for ‘A just response to mistakes or violations’ (factor loading –.601). It may be that ‘just response’ was widely interpreted as lax control of safety breaches (certainly, there was some conversation to this effect in some interviews). However, ‘A just response’ weights more on Factor 1 and is therefore excluded from Factor 6. Therefore this factor is seen to represent Hazard awareness:

- I am aware of the risks and hazards .789

The seventh component of the factor analysis strongly suggests that the question, ‘Is it sometimes necessary to break safety rules?’ stands alone as a Risk acceptance factor (factor loading .918).

These clusters represent a possible model from which a safety measurement for the meat industry could be built:

1. Safety culture
2. Safety engagement
3. Application of safety
4. Procedural safety
5. Employee control of safety
6. Hazard awareness
7. Risk acceptance

5. Anecdotal illustrations

Appendix 7 contains extracts from the interviews across the sample, illustrating typical responses of both managers and employees to each of the survey statements and questions put to them.

Well I come to work with all my parts and go home with all my parts!!

In summary, the comments reflect a feeling for working safely that is well grounded in common sense, but that often lacks sophistication and a broader, longer term view to prevention of injury.
Discussion

This survey is based on treating an organisation as an entity, rather than as simply a sum of its individual employees. It is the safety culture of the organisation we were keen to appraise, rather than simply the attitudes and beliefs of the individuals comprising it. Therefore a multi-layered approach was taken, collating information from line workers, managers and supervisors and the organisation itself (its systems, structures and processes). Also, because of known characteristics of many meat industry employees of low literacy, information collection was based on an individual, face to face approach—a series of conversations. This was supported by also having participants complete a rating scale. Items were selected to promote discussion of general cultural issues rather than specific technical safety measures.

A major review of safety programs in the USA (USGAO, 1997, 4) found that ‘effective ergonomics programs must have the following core set of elements to ensure that ergonomic hazards are identified and controlled to protect workers:

- management commitment,
- employee involvement,
- identification of problem jobs,
- development of solutions (that is, controls) for problem jobs,
- training and education for employees, and
- appropriate medical management.’

The detail of these points (summarised below) makes a very effective benchmark of safety management practice. The evidence from this study pertaining to each point is shown in blue.

Management Commitment

Specific ways in which management commitment can be demonstrated include:

- assigning staff specifically to the safety program and providing time during the workday for these staff to deal with safety concerns;
- establishing goals for the safety program and evaluating results;
- communicating to all staff the program’s importance;
- making resources available for the safety program.
Evidence

Figure 4, both ‘A strong focus on safety’ and ‘A senior management that is strongly committed to safety’ rated well, supporting management commitment.

Table 16, ‘Company treats safety mistakes fairly’, ‘Company works to prevent accidents’, ‘Supervisors/managers are committed to safety’ and ‘safety systems are effective’ are all positively scored, supporting management commitment.

Table 16, ‘Management acts in a positive and open way’ and ‘Safety is more important than production’ are rated less positively, indicating some areas of reservation about management commitment.

On balance, the survey results provide support for management commitment. However there is clearly room for further improvement.

Employee Involvement

Some of the ways in which employee involvement can be demonstrated include:

- creating committees or teams to receive information on safety problem areas, analyse the problems, and make recommendations for corrective action;
- establishing a procedure to encourage prompt and accurate reporting by employees;
- undertaking campaigns to solicit employee reports of potential problems and suggestions for improving job operations or conditions; and [p10] administering periodic surveys to obtain employee reactions to workplace conditions so that employees may point out or confirm problems.

Evidence

Figure 4, both ‘Good organisational learning’ and ‘A management leadership style that is democratic’ rated less well, indicating against effective employee involvement.

Table 16, ‘Company communication is good’, ‘Employees are encouraged to talk’, ‘Employees are encouraged to contribute to safety policy and procedures’, ‘We are (not) expected to do what we’re told regardless’, and ‘Management acts in a positive and open way’ all rated less well, appearing to reflect a degree to which employees do not feel involved in company processes.
Table 16, ‘I am kept well informed on safety’ rated well, counterbalancing the weight of evidence slightly.

On balance it seems clear that most companies in the sample are not managing employee involvement as well as they might.

**Identification of Problem Jobs**

For this approach, employers could use the following methods to identify problem jobs:

- following up on employee reports of MSDs [musculoskeletal disorders], symptoms, discomfort, physical fatigue, or stress;
- reviewing the OSHA 200 logs and other existing records, such as workers’ compensation claims; and
- conducting interviews or symptom surveys or administering periodic medical examinations.

**Evidence**

The first evidence for this is the difficulty many companies in the sample had with producing the basic statistical information sought. This alone suggests that a systematic approach to reviewing company safety data will be difficult for most companies.

The incident reporting system seems to work better in all companies, although in some cases it is very informal and captures little data for longer-term review and follow-up. This aspect seems in most cases to be done relatively well. Nevertheless, it is the perception of many raters that ‘A good system of reporting problems’ (Table 16) does not apply.

There is no direct evidence that companies in the sample engage in activities resembling the USGAO Report’s third point. From Table 16, ‘Company communication is good’ and ‘Employees are encouraged to talk about concerns and new ideas’ rated less well, perhaps drawing the inference that the gathering of relevant information from people does not happen well even at a more informal level.

Against the benchmark of ‘Identification of problems’ the sample operates moderately well in reactive identification (tracing the cause of an incident or injury and addressing it) but not well in pro-active identification (gathering and analysing relevant information on a regular basis to anticipate potential causes of injury). There is little direct evidence of use of the Manual Handling Code of Practice or the Meat Industry Ergonomics Best Practice Manual.
Analysing and Developing Controls for Problem Jobs

Analysing the job or evaluating an employee’s workstation to identify the ergonomic hazards present in the job can involve a variety of activities, including:

- observing workers performing the tasks, interviewing workers, or measuring work surface heights or reach distances;
- videotaping a job, taking still photos, measuring tools, or making biomechanical calculations (for example, of how much muscle force is required to accomplish a task) in order to break jobs down into component tasks and identify risk factors present; and
- administering special questionnaires.

Efforts to develop appropriate controls can include:

- ‘brainstorming’ by employees performing the job in question or by team members performing the analysis;
- consulting with vendors, trade associations, insurance companies, suppliers, public health organisations, NIOSH, labour organisations, or consultants; and
- following up to evaluate the effectiveness of controls.

Evidence

There is limited evidence in the sample of many of the points made in the USGAO Report. One or two companies are the exception, making use of physiotherapists to conduct ergonomic evaluations of various workstations and make recommendations. Table 16, ‘Safety improvement don’t get put off’ and ‘Employees are encouraged to contribute to safety policy and procedures’ rated less well, suggesting that analysis and development of controls is not done in a systematic way. There is no evidence of ‘special questionnaires’ and limited evidence of systematic follow-up to evaluate the effectiveness of controls.

Training and Education

Recognising and filling different training needs is an important step in building an effective program. The different types of training might be offered include:

- overall ergonomics awareness training for employees so they can recognise general risk factors, learn the procedures for reporting MSDs or symptoms, and become familiar with the process the facility is using to identify and control problem jobs and
targeted training for specific groups of employees because of the jobs they hold, the risks they face, or their roles in the program, such as for line supervisors and managers to recognise early signs and symptoms of MSDs; for engineers to prevent and correct ergonomic hazards through equipment design, purchase, or maintenance; or for members of an ergonomics team to perform job analysis and develop controls.

**Evidence**

Table 16, ‘OH&S training is effective in preventing accidents’ rated well, suggesting that people broadly believe that safety training is adding value. The anecdotal evidence is more equivocal, some seeing value, others not:

Well to a certain extent I guess.

What about the meat on the floor and stuff, because that comes under health doesn’t it, you know, like the meat they put on the floor when I got here was the amazing—and in the last year it’s changed completely. There’s been a lot of training. A lot of training...in the last year.

People’s awareness and people’s intelligence of safety has improved out of sight...

It’s good training but it doesn’t prevent accidents. It would have to be tailored...but for meat works...there isn’t any. I have never seen a [safety] training course that says this is for the meat works.

Well it must be because we haven’t had any. I mean it’s what it’s all about.

On balance companies in the sample seem to address general safety training well enough, but there is little customised and specialised safety training in evidence. Mostly this is addressed in the course of ad hoc ‘on the job work instruction’.

**Medical Management**

A medical management program emphasises the prevention of impairment and disability through early detection of injuries, prompt treatment, and timely recovery for the employee. Different ways facilities can carry out medical management include:

- encouraging early reporting of symptoms and ensuring that employees do not fear reprisal or discrimination on the basis of such reporting;
• ensuring prompt evaluation of MSD reports by health care providers;
• making health care providers familiar with jobs, perhaps through periodic facility walk-throughs or review of job analysis reports, detailed job descriptions, or videotapes of problem jobs; and
• giving employees with diagnosed MSDs restricted or transitional duty assignments (often referred to as “light” duty) until effective controls are installed on the problem job, and conducting follow-up or monitoring to ensure that they continue to be protected from exposure to ergonomic hazards.

**Evidence**

There is no statistical evidence available to bear directly upon these points. However, the anecdotal evidence suggests that in most companies this is done moderately well. The first stage, of reporting injuries, is done well in all cases, and the initial treatment in most cases is appropriate.

The involvement of health care providers in understanding the jobs and becoming familiar with the company and the facility is much more inconsistent. Some companies in the sample showed evidence of very good liaison with medical practitioners and physiotherapists. In other cases the relationship is almost antagonistic.

Relating to the USGAO Report’s third point, the WorkCover procedures drive a return to work focus quite well, however there is variability in the sample in how positively this process is handled. In some companies there was a clearly positive, supportive emphasis that demonstrated caring for the worker’s welfare as well as the needs of the company. In other cases the approach seemed much more reactive—‘they have to be at work so we’ll make something up’, or ‘these restrictions are too severe, we can’t offer anything.’

**Underlying cultural issues drawn from the results**

**Engagement in safety**

Interest in safety culture can be inferred from the interest shown in this study itself. The difficulties in achieving the sample documented earlier in this report attest to a marked lack of interest in safety culture. It is likely that this is because of a combination of factors, most notably the competing interests of production and profit [p11-12, p30] and the belief by many managers that ‘engineering’ (safety guards, mesh gloves) and ‘administrative’ solutions (standard operating procedures, safety notices) to safety are sufficient. Even within the sample, the view was common
that there really wasn’t time for this attitudinal approach. By the same
token, some companies within the sample took a very positive approach
to tackling safety from a cultural perspective.

Management of information

Management of information—especially safety information—is a concern
in many of the companies surveyed. This is reflected in the patterns of
valid and missing data (Figures 1 and 2) and the link between data quality
and compensation costs (Table 14). Statistical analysis of safety data is
rare in the sample. Data collection is more consistent (mostly paper
records), but often analysis is ad hoc and cursory, not systematic.
Reporting of incidents and injuries is generally good—largely driven by
HACCP procedures—but report follow-up is more ad hoc and less
consistently done.

Focus of control measures

The sample data shows that control of injury costs appears to have a
strong correlation with preventing the less serious (MTI) injuries (Table
4). The WorkCover Corporation-supplied industry data suggests that
knife cuts are frequent but the associated cost of compensation is not high
(Table 8). The treatment is relatively straightforward in most cases and
return to work is rapid. Knife cuts are the ‘normal’ injury for the industry
and little or no stigma is attached to this injury. Muscle strains, on the
other hand, are common and expensive too (Table 6).

Prevention of traumatic injuries is important (especially by power tools,
which tend to create very serious injuries, but are rare), but ergonomic
injuries are the real cost. These injuries tend to be much less clear cut (no
pun intended) and treatment is often more complex, as are attitudes of
colleagues and managers to the muscle strain-injured worker. The
following quotes from the survey illustrates this well.

    The least problem…with individuals is cuts. They're not a
problem. I don't see them as a great problem in this industry.
You may think it's strange...because a lot of this stuff cannot
be handled mechanically, it's got to be done physically. And
that's just the nature of the industry.

    I think our injuries have dropped dramatically and I think
where our problems are coming from now, more repetitive
strain injuries, they're certainly not the knife injuries...shoulders and the hands and the arms.
Safety culture and safety outcomes

There is a trend in this study that good safety culture is correlated with good injury management outcome (page 17, and Figures 7 and 9). The inference that can be drawn is that in a poor morale / poor culture organisation, injury is more likely to occur and, once injury occurs, the worker has less motivation to return to work (see also comments on page 19 referring to Table 8).

A culture of ‘getting people back to work quickly’ may be as important as a culture of ‘no injury’. A company with a poor culture is likely to be more vulnerable to high claim costs because the employee is less motivated to work and less inclined to ‘do the right thing by their employer’. A company with a good culture is more likely to keep claim costs low (Figure 9). It is probable that this is due to a combination of less injuries (because of generally good safety practices) and better return to work outcomes (better mechanisms and a more positive attitude by the injured employee to early return to work).

The survey data are clear that there is no relationship between safety culture (or safety outcomes) and company size. There can be on the other hand, especially in small companies, a disproportionate financial impact of a single high cost injury. Of more importance in effective return to work are factors such as:

- does the company have an established ‘connection’ with medical providers who understand the company and the industry; and
- does the company have a positive morale—do people like to come to work

Variations in safety ratings

There are large variations across the sample in culture scores [Figure 5], culture score components (Figure 4) and rated items (Table 17). It is clear that all companies surveyed can improve, and some would benefit from some specific assistance to develop their safety cultures.

Item ratings in this survey are generally positive (Table 16). Williamson, Feyer, Cairns, and Biancotti (1997) also found that item responses consistently tended to be in the direction of ‘good’ safety climate in their survey. Williamson et al. suggest that this strong positive rating pattern may be a result of perception sampling (upon which the current study is essentially based). Therefore in the current survey the consistent positive ratings may reflect an artefact due to this bias to ‘positive rating of perceptions’ as much as any factual strength in the safety cultures.
Managers are more uniform than employees in perceiving that ‘all is well’ with safety (page 32).

There is a consistency of understanding of safe procedures and of hazards—this is across companies and across employee/manager. Anecdotal evidence suggests that this is largely due to mandated quality programs, such as HACCP.

Quality management training has tightened up the industry but the underlying management thinking in many cases seems to be ‘safety is the passenger on the quality train’. Safety is reactive and ad hoc. It was common in the sample to have good paper work (manuals, policy, forms created from HACCP or similar frameworks) but for these to have been not well, or never, implemented.

**Level of disregard for safety**

Overall, the level of disregard of safety is low. However, there are some notable exceptions. There is a pervasive perception that safety improvements do get put off (Table 16). Some comments from participants include, ‘their hands are tied…They give you support, yeah, but no money’ ‘I think prioritising comes into effect’, suggesting that financial constraints are a major consideration. Breaking safety rules is perceived by many as ‘a necessary evil’ (Tables 16 and 17). Comments from participants include, ‘I think if we’re all being honest…’; ‘There’s always the exception…’ A typical example is:

> I’ll give you an example: [name removed] specifies that on some jobs you have to wear safety glasses for protection [to prevent leptosporosis]. On a cold morning, you can’t see anything and that’s a sight more dangerous than the risk of leptosporosis.

Management is seen as not always positive and open to reported problems (Table 16). There is a pervasive ‘us and them’ cultural thread running through the industry still. Genuinely inclusive management styles exist but they are the exceptions. Occasionally this ‘us and them’ culture is so strong it includes ‘owners vs managers’.

Some of the elements where employees and managers do not connect or agree (Table 18—safety improvements don’t get put off, management acts in a positive way on reported problems) add up to a cultural attribute we could call trust. There is still a broad lack of employee trust in management, and for that matter a lack of management trust in the employees too.
Safety versus production

Safety is not seen as more important than production by about half the sample (Table 16). This issue really divided people in the survey. Either safety is predominant (interestingly this was mostly a view expressed by managers), safety and production are balanced, or production has predominance (this was the predominant view expressed by employees, reflecting their perception of management practice).

The labour pool

A number of companies in the sample described being hampered in their effort to create a more positive culture by the limitations of the labour pool available to them.

There are certainly signs in the results that many recruitment practices are leading to hires with poor attitudes, resulting in poor culture and high turnover. This also includes loss of good people who seek a more positive work environment. Also high turnover often results in wasted training. There were a number of comments relating to the loss of personnel shortly after they had received specialised training, for example:

…but then you have to train people, just to train somebody else into it the next week because they've left.

This in turn tends to compromise safety and to lead to further disaffection and loss of good employees.

More companies have increased their use of labour hire. Positives include flexibility, some pre-training and capacity to check out recruits before making a commitment. Negatives include that in-depth training is unlikely to happen where labour hire turnover is high. Therefore there will tend to be greater turnover, and management will tend to know their workforce less well.

A Safety Model

The factor analysis from this study—including all the items rated by participating employees and managers and all the components of the composite Safety Culture Score used in benchmarking the survey companies—yielded a number of factors that may be used separately or collectively to develop a model of safety.
These seven factors are:
1. Safety culture
2. Safety engagement
3. Application of safety
4. Procedural safety
5. Employee control of safety
6. Hazard awareness
7. Risk acceptance

**Other safety culture/safety climate models**

Brown & Holmes (1986) surveyed 425 American production workers, and found a three factors safety climate model:

1. Management attitudes—how concerned management is with employee well-being.
2. Management actions—how active management is in responding to employee concerns.
3. Level of risk—employees’ perception of physical risk.

Williamson *et al.* (1997) surveyed 660 Australian workers from various workplaces to produce five factors:

1. Personal motivation for safe behaviour;
2. Positive safety practice;
3. Risk justification;
4. Fatalism; and
5. Optimism.

The factor set derived from our current survey is not inconsistent with the other models reported from the literature. However, the diversity of views from which the issues of safety can be considered does flag the complexity of the safety system. We have attempted to represent this complexity in an alternative model.
A safety ecology model

Mearns and Flin (1999) differentiate between safety climate and safety culture, describing ‘safety climate’ as employees’ perceptions, attitudes, and beliefs about risk and safety—typically measured by questionnaire surveys—and ‘safety culture’ as a more complex and enduring trait reflecting fundamental values, norms, assumptions and expectations—seen through safety management practices. Denison (1996) refers to climate in terms of its link to thoughts, feelings and behaviours of organisational members, emphasising its transitional characteristics—it is temporal, subjective and often subject to direct manipulation by people with power and influence. By contrast Denison sees culture as an evolved context rooted in history, collectively held, and resistant to direct manipulation.

These authors emphasise the complex nature of safety culture and safety climate and yet it seems that perhaps limiting the construct to only culture and climate is not a sufficient description. Reviews of the literature suggest that ‘perceptions’ and ‘descriptions’ form the basis of climate and ‘attitudes’ and ‘beliefs’ are taken as the cornerstones of culture. Bearing from the clearly multi-layered picture of safety in organisations emerging from this study, we suggest that this is too narrow a view, and a new model is presented here to describe the complex combination of factors that together interact to create a safety ecology.

Safety culture

The composite attitudes, beliefs, values and habits of working of employees, managers and owners. These will tend to be relatively enduring and resistant to change. Change in safety culture within this model needs to be accomplished indirectly, via deliberate changes in the safety climate and the safety conditions. And yet it is change in these elements of safety culture that will ultimately affect long term safety performance.

Safety climate

The organisational practices, policies and structures that relate to safety directly (safety committees, safety training, safety signage and equipment) or indirectly (employee welfare programs, communication strategies, leadership style, recognition programs)—the tangible signs of safety that employees can perceive. These are elements that can relatively easily be manipulated by changes in policy and procedure, and in which change can be more rapidly effected. However, these changed will tend to
be mechanical if they do not also translate into changes in the attitudes, values and beliefs of people in the organisation. There will be ‘slippage’—safety committees will be hard to fill, safety meetings will tend to fill with operational matters, communication will lapse, safety signage will be ignored, training will become a low priority.

**Safety conditions**

Safety conditions are the underlying factors that will influence attitudes and decisions impacting on safety. These include production pressure (pressure to perform regardless of safety conditions), general conditions of the workplace (is it a positive place to work—do people want to go to work) and the orientation of employees and supervisors to risk-taking (risk taking is required, expected, tolerated, discouraged or sanctioned against). Safety conditions will also include external pressures such as customer and government driven quality requirements, government driven safety requirements and industrial relations issues.

**Safety behaviours**

Safety behaviours in this model are the specific individual responses to safety incidents. Safety behaviour is the end product of a combination of forces derived from all of the processes described above. Presented with a safety choice, an individual employee or manager will make a choice—their decision will come from their own attitudes and values, what they believe the attitudes and values of their managers are, respect (or otherwise) for policies and procedures, perception of pressures to produce, perception of pressures to conform to legislation, and so on.

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**Conclusions**

Taken in summary, the evidence from this study of safety culture in the South Australian Meat Processing Industry leads to a number of clear conclusions.

**Concern to be safe**

Concern and intention to be safe is almost universal. The survey results show that managers and employees want to be safe and to work safely. Also managers want employees to work safely and employees want their coworkers to be safe.
Attention to safety

However, the attention given to safety and the level of detail of activities that bear on safety culture varies markedly. For example, safety training varies from off-line ‘communication skills’ training for employees just to improve communication across the plant (that is, not of ‘practical’ relevance—but of real benefit in improving the exchange of important information) to only teaching safety on the job or as a quick tour as people start up.

There is considerable anecdotal evidence from the conversations with individuals and groups that the broad MINTRAC training has had some but only limited impact in terms of safety thinking. Mostly this training, which is the ‘centrepiece’ of safety training in many companies, occurred two years ago and has not been followed by any other safety training. Many employees now are relatively new in companies and did not participate in the MINTRAC training. Furthermore, a significant number of employees who did the MINTRAC training commented that it was not customised well to the industry (for example, general ‘office-based’ examples were often used by trainers), it was not owned by the companies or employees (as they had little say in its content).

This is the area in which companies vary most in their safety cultures. The more positive safety culture facilities pay attention to detail—they have systems and processes in place and follow through to make sure they are used. The less positive safety culture facilities may have systems and processes but not adhere to them well, or may not have clear systems and processes for safety.

‘Too busy’ for safety

There was a significant attitudinal thread of ‘busy-ness’ in many of the companies contacted—in fact and as expected, ‘too busy’ was a common reason for declining to participate. Even within the companies that did participate, there was a strong flavour of ‘busy-ness’ that affected access to personnel to interview. The ‘too busy’ syndrome—given teeth by genuinely high workloads in some cases—applied at both manager and employee levels, and appeared much less powerful in the more positive safety culture plants.

At manager/supervisor level typical comments were, ‘we haven’t got time for non-production issues’ or ‘sure—oh, I’m sorry something more important (a production issue) has come up’. At the employee level the
attitude, ‘just let me get on and work, I can’t be bothered (with being a safety representative, or being on a safety committee)’ was prevalent.

It seems clear that if a genuine and broad commitment to creating a positive safety culture is to be achieved, simple, easily administered and time conserving strategies need to be identified and promoted. The processes used by the USGAO case study facilities were ‘typically informal and simple….Controls did not typically require significant investment or resources and did not drastically change the job or operation.’ (USGAO, 1997, 4). This needs also to be the broad strategy for this industry—positive results can be achieved through an approach incorporating core safety culture elements that are implemented in a simple, informal, site-specific manner. There is merit to an approach that encourages companies to adopt a set of core elements (such as those described from the USGAO Report) and gives the companies some latitude to customise elements and to determine the level of effort necessary to be effective. This includes an approach where companies manage problems—at least initially—on an incidence basis and move toward a more proactive process as the safety culture matures.

It is important also to find effective ways to demonstrate to people within the industry that some effort in this area will pay for itself with interest. The USGAO study (1997, 4) reports, as a result of good safety practices, ‘reductions in overall injuries and illnesses as well as in the number of days injured employees were out of work.’ The study also found that the number of restricted workdays increased as a result of an increased emphasis on bringing employees back to work, but as a result of the additional investment of effort, there was ‘improved worker morale, productivity, and product quality.’

Manager thinking/doing mismatch

Argyris (1992) describes a gap between managers’ beliefs about their own practices and what they actually do. The evidence of this survey suggests there was a gap between managers’ perceptions about safety and employees’ perceptions. To repeat the comments from page 33, ‘The statements for which there is significant difference between manager and employee ratings appear to reflect three themes:

- Managers perceive a more open, encouraging management approach to involving employees in safety thinking.
- Managers perceive a more genuine, active management commitment to safety improvement.
- Managers perceive more positive workplace conditions and morale.’
Corrie Pitzer, Managing Director of employee safety surveying company SAFEmap, describes this as a ‘disconnect between what management think is happening and what employees know is happening’ (Sabourin, 2000, 34).

In our qualitative judgment, most of the managers in this sample were expressing genuine beliefs. There was some edging towards presenting a positive picture about safety but this did not account for the full extent of the positive perceptions expressed by managers. The anecdotal evidence of their statements seems to clearly represent what they actually believed to be true. However the objective picture, and our observations, suggests that the employee perceptions were closer to an accurate representation of the safety culture in each company. This finding represents the classic mismatch between what managers think and what managers actually do described by Argyris (1992).

This points to an important aspect of improving safety culture, namely assisting managers to be more aware of the gap between what they think happens and what they actually practice. Improvement in this area would reduce some of the cynicism about managers’ attitudes, and would undoubtedly help improve the safety culture.

**Communication is good, but…**

The participant ratings for communication were generally sound, but at the level of qualitative information there is some concerning evidence that leads to a conclusion that communication isn’t as sound as it might appear (or at least, as people are perceiving). A possible reason is a lack of a good comparison—the industry and many of the employees and managers in it have come from a period of very poor communication, *and great progress from that has been made, so now it is perceived as good.* An anecdotal example of misplaced confidence in the communication standard is a manager who rated communication as good, among other reason, because, ‘we have toolbox meetings regularly to discuss OH&S issues’. However an employee under that manager stated later (without prompting on the issue), ‘We haven’t had a proper toolbox meeting in 12 months. No OH&S, just production stuff.’
Safety information is not used to promote safety thinking

One of the clear points that Reason (1997) makes is that to make everyone think about safety in proactive and creative ways, everyone needs access to safety information and skills to use it. One or two of the companies in the survey are doing this systematically. Most are keeping quite good safety information, but have no systematic way to collate, analyse or disseminate it. A few keep very little safety information. Some illustrative comments from the survey are:

…if you have a complaint with someone or about something you go and talk to someone about it, but you never really get a lot of feedback about what's happening…

For reporting problems, yeah. The near misses…not really. Remember the hassle that we’ve had with those little books. We’ve been trying to get something in place. We didn’t even get to try it, it only got to the talking stage. Yeah. I’ve got a diary I keep, and I fill it in every night when I go home, and it’s mainly what people have told me through the day. That’s my initiative to do it. That’s in case something happens and further down the track and someone says, ‘You never told me’, I can say…

We don’t hear the follow up, it’s either fixed or…something else has come up.

I actually report it myself…I know ‘Dave’ reports it…The foreman have got their diaries and they’ve got an incident sheet…any incident that happens through the day they write it down…that’s all databased down in the QA office…

In some facilities, informal communication channels have overshadowed company communication. Informal communication channels have no quality control and can become wildly inaccurate.

I would go usually true for the slaughter floor, because we have got an incredible grapevine.

Some interesting divergences of view were also observed:

Manager:

Yes. Toolbox meetings. We have them at least once a month and that’s on our stats, we certainly are well informed.

Employee:

No. Grey area.
Communication

The outcomes and results of this project have been communicated to key stakeholders and relevant groups in the following ways to date:

- A presentation to the Meat Industry OHS Committee of preliminary findings and recommendations.
- A presentation to an open forum of the industry as part of Safety Week 2000.

In addition individual feedback to participating companies will occur once the final report has been accepted, and also a Brief Report for broader industry access will be generated summarising the research and recommendations.
Extension of Results

We have used our set of recommendations as the primary vehicle to describe the ways in which we believe these results can be effectively extended. In addition, we also put forward some areas worthy of further research.

Further research

Attitudes to risk and personal responsibility

This study uncovered a number of attitudinal indicators (in particular around the item, ‘Is it sometimes necessary to break the safety rules?’) that suggest differences in attitudes to risk and personal responsibility that impact upon decisions to engage in potentially hazardous behaviours. There was no scope within this study to examine this in any depth. However this is an area of potential value in determining the personal factors in risk taking.

Internal organisational safety process alternatives for small operators

Clearly small operators find it difficult to resource many of the activities required to promote a positive safety culture. A worthwhile small supplementary study would be to identify alternatives requiring fewer resources.
Recommendations

A number of recommendations arise from the analysis and discussion of this survey.

OSHA\(^1\) has developed an approach which includes (1) education, outreach, and technical assistance to employers; (2) research on the effectiveness of safety improvements that employers have implemented; (3) enforcement; and (4) a standard for industry (USGAO, 1997, 7.) We consider that points 2, 3 and 4 are addressed within the current activities of the workers compensation authorities in Australia. Our recommendations primarily address the needs of point 1. They are:

1. **A Safety Culture Audit**

   We propose a Self-Audit and External Audit combination. This would involve the design of a quick and easy Safety Culture Self Audit based on the findings of this study, that companies can use both to check their Safety Culture and also to provide a framework of the key elements of a good safety culture.

   This could be supported by implementation of an External Audit—in a similar way to the ISO 9000 External Quality Management Audit—to provide an external accreditation to companies (that perhaps SAsfer Industries or WorkCover Corporation could sponsor), that their safety culture is positive. This would need to be voluntary, but perhaps could be linked to a modest WorkCover Corporation incentive.

   The basis for these audits would be the outcomes of this survey, enhanced by other inputs. For example, Mearns and Flin (1999) suggest a number of key areas for measurement:
   - injury frequency rates;
   - dangerous occurrences;
   - incident potential;
   - senior management involvement and commitment;
   - safety training provision; and
   - number of days lost through injury or occupational illness.

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\(^1\) United States Occupational Safety and Health Authority
Mearns et al. (1997) use a balanced scorecard to benchmark safety allowing organisations to look at safety from four perspectives:

1. Customer perspective: Is the workforce satisfied with safety?
2. Internal business perspective: How is safety managed within the organisation?
3. Financial perspective: What are the costs of safety?
4. Learning and growth perspective: What can be done to improve the process of safety?

Companies scoring low in either audit process would need to be able to access resources to be able to effect changes.

2. Safety culture injections

One way to resource companies needing to change significantly could be via ‘safety culture injections’. The concept is to implant one or two people who are very experienced in working in positive meat industry safety cultures—maybe partly funded by WorkCover Corporation or by the industry—to model positive attitudes and disseminate good tools and strategies. These people would probably be most effective if working in an on-line capacity, alongside workers and managers. However, they could also operate as ‘off-line’ advisers.

3. Best Practice Safety Culture Toolkit

A major recommendation is that a Best Practice Safety Culture Toolkit be developed which includes effective safety culture ideas collected from around SA (and maybe from more broadly) and a number of specific models suited to different sized firms. This toolkit would be built around the model drawn from this study, and would provide very practical help for companies to develop:

- a strong, deliberate and clearly communicated safety culture, and
- flexibility and the ability to innovate.

This Toolkit also needs to facilitate a clear focus on proactive injury management strategies, as the data clearly reflects that companies taking a more responsive, proactive approach to managing injuries are achieving better cost and return to work outcomes.
4. Recruitment and selection

It is important to change the way recruitment and selection occurs in the meat industry, so that it is based more on selecting people, both staff and managers, with the fitness and technical skills necessary and also the right character and attitudes to work and working safely.

Part of this needs to be part of a broader strategy to make meat processing work more appealing to the right target groups (and to identifying what these targets groups are). The trend in recent years to increased use of labour hire to ‘shift the risk’ is not necessarily the solution it appears to be. The host employer is still left with both WorkCover and common law responsibilities. Use of labour hire personnel needs to be tempered with insistence that the labour hire companies also recruit and train in appropriate ways.

New tools for selection that emphasise more the personal qualities of the applicants could form part of the Safety Culture Toolkit.

5. Re-assess safety training programs

The MINTRAC program reached many people, but its effectiveness has been impaired because it was seen as a one-off solution to safety training and it was not customised well to the industry.

It is important that the industry looks carefully at a training strategy that:

- has a regular cycle built in (regular introductions to safety for people new to the industry and ‘updates/refreshers’ for experienced employees and managers), and
- allows for customising safety training at least to the industry, and preferably to the needs of individual companies.

6. Executive safety coaching

It is clear from our contact with many meat industry personnel that both having a senior position and having respect within the company are most important in the meat industry culture. Also, in the meat industry culture respect is more likely to go with people in more senior positions. It is therefore important that the champions of safety and safety culture in the plants be in senior positions—with enough personal and positional authority to be granted respect and to be taken seriously.
Therefore our final recommendation is that a group of five meat company CEOs are especially selected to participate in a special safety coaching process. This could be conducted as a pilot program over 12 months, and may be done in conjunction with Safety Culture Toolkit initiatives.
Appendices

Appendix 1—Organisational Safety Data

Please complete this and the next page before the interview


A summary of the company’s employee profile will be important in making sense of the other information collected.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of female employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number* of MTI and LTI claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of employment</td>
<td>0–2</td>
<td>3–5</td>
<td>6–10</td>
<td>11–15</td>
<td>16+</td>
</tr>
<tr>
<td>Number of employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of female employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of MTI and LTI claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Medical Treatment Injuries and Lost Time Injuries

2. OHS Performance: 1 July 1999–30 June 2000

This information will be important to draw comparisons at a company level between measured safety culture and actual safety performance.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reported near misses/incidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of (work related) first aid accidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of medical treatment (MTI) claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of lost time injury (LTI) claims</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time lost per LTI claim (average)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of Workers Compensation claims (all costs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3a. Site Groups Participants—Position Profile

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td></td>
</tr>
<tr>
<td>Supervisors</td>
<td></td>
</tr>
<tr>
<td>Tradespersons</td>
<td></td>
</tr>
<tr>
<td>Factory Hands</td>
<td></td>
</tr>
<tr>
<td>Packers/Stores</td>
<td></td>
</tr>
<tr>
<td>Labourers</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

### 3b. Site Groups Participants—Age Profile

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 to 25 yrs</td>
<td></td>
</tr>
<tr>
<td>26 to 35 yrs</td>
<td></td>
</tr>
<tr>
<td>36 to 45 yrs</td>
<td></td>
</tr>
<tr>
<td>46 to 55 yrs</td>
<td></td>
</tr>
<tr>
<td>56 to 65 yrs</td>
<td></td>
</tr>
</tbody>
</table>

### 3c. Site Groups Participants—Injury Profile

<table>
<thead>
<tr>
<th>Injury record [last 5 years]</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6 +</td>
<td></td>
</tr>
</tbody>
</table>

### 3d. Site Groups Participants—Length of Employment Profile

<table>
<thead>
<tr>
<th>Length of employment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 yrs</td>
<td></td>
</tr>
<tr>
<td>3 to 5 yrs</td>
<td></td>
</tr>
<tr>
<td>6 to 10 yrs</td>
<td></td>
</tr>
<tr>
<td>11 to 15 yrs</td>
<td></td>
</tr>
<tr>
<td>16 yrs +</td>
<td></td>
</tr>
</tbody>
</table>
**Final Report**

*Please DO NOT complete the following sections yet.* These will be discussed with you on the survey day, and are included here as an indication of the areas the researcher will inquire about.

*PLEASE DO GATHER* any information or examples, and make any notes that are relevant to each of these areas—as this will greatly speed up the process on the day. Of particular interest is what policies, procedures and organisational practices are in place.

### Safety information

<table>
<thead>
<tr>
<th>Safety information collection and storage. Safety audits—how often? How is safety information analysed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety information dissemination. How is safety information communicated to others?</td>
</tr>
<tr>
<td>Hazards list. Do you have a prescribed hazards list? How is it used?</td>
</tr>
<tr>
<td>Incident reporting. What is reported? How is reporting done?</td>
</tr>
<tr>
<td>Incident data by section, type, cause, response. What data do you keep on reported incidents?</td>
</tr>
<tr>
<td>Incident response. What is the procedure for responding to a reported non-injury-incident?</td>
</tr>
</tbody>
</table>
### Injury management

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury response. What is the procedure for responding to a reported injury-incident?</td>
<td></td>
</tr>
<tr>
<td>Claims management. How are claims managed?</td>
<td></td>
</tr>
<tr>
<td>Rehabilitation. How is rehabilitation managed?</td>
<td></td>
</tr>
</tbody>
</table>

### Prevention

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety policy and procedures.</td>
<td></td>
</tr>
<tr>
<td>Safety training.</td>
<td></td>
</tr>
<tr>
<td>OHS Committees/Consultative process.</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td></td>
</tr>
<tr>
<td>On-site paramedical treatment of non-acute injuries.</td>
<td></td>
</tr>
<tr>
<td>Recruitment. Is there a focus on safety in recruitment? What is done regarding safety in induction and pre-employment?</td>
<td></td>
</tr>
<tr>
<td>Other safety activities.</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 2—Safety Culture Survey

**SAFER Industries** (Meat Industry Committee)

### Safety Culture Survey

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Never</th>
<th>True</th>
<th>Usually Not True</th>
<th>Not Sure</th>
<th>Usually True</th>
<th>Always True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Company communication is really good.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Employees are encouraged to talk about concerns and new ideas.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>There is a good system for reporting problems, near misses and mistakes.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Safety improvements get put off because of lack of support or money.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>My job is clear. I know exactly what to do to work safely and well.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Management acts in a positive, open way on reported problems.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The company treats safety mistakes and errors fairly.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I am very aware of the risks and hazards in my work place.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I control how safe my work is for me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>People are careful to work safely here.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>My company works hard to prevent accidents from happening.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>We are expected to do what we’re told regardless of safety issues.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I believe my supervisors are committed to safety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I believe my senior managers are committed to safety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Safety rules are clear and well understood.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I know the safety systems are effective.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I am kept well informed of safety and safe working procedures for my area.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>This is a good place to work.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I am happy in my job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Employees are encouraged to actively contribute to safety policy and procedures.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>OH&amp;S training is effective in preventing accidents.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Safety is more important than production and keeping costs down.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Is it sometimes necessary to break the safety rules?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO awful</td>
</tr>
</tbody>
</table>

### Open questions

- What does safety mean? What does safety mean in practice?
- What happens when concerns about safety are raised?
- What happens when mistakes or accidents happen?
- How is safety spoken about? How does safety information get shared?
- Who is responsible for safety at your workplace?
Appendix 3—Letter to all SA meat industry companies

13 July 2000

Name
Title
Company
Address

Dear <Company>

I am writing to advise you of a significant measure being undertaken to further improve the safety culture in the South Australian meat industry.

The SA Meat Industry Safety Committee in conjunction with SA WorkCover Corporation has retained the services of a South Australian firm, McPhee Andrewartha Pty Ltd. to examine the safety culture in 15 randomly selected companies in SA. McPhee Andrewartha have been involved extensively in the meat industry when they conducted the national management benchmarking research, the management competencies and the HR management implementation from 1995 to 1998.

This SA safety culture project will involve

- an arranged visit to your company site by the consultants
- a one hour discussion meeting with a selected group of six to eight managers
- a one hour discussion meeting with a selected group of eight to twelve employees
- collection of some data relating to safety management and injury records
**Advantages for your company**

A special free on site debriefing of:

- a detailed analysis of your company’s safety culture
- specific recommendations for improving the safety culture in your company
- where your company ranks in contrast to the other 15 (anonymous) firms
- the overall results of the whole study

If your company is selected from the random sampling the next step is that you will be contacted by the committee to confirm your involvement.

Michael Correll or Graham Andrewartha from McPhee Andrewartha will then follow up detailed arrangements with you. The site visits are intended to occur between 15 August and the end of October 2000.

I expect the immediate benefits to your company will be significant and that your involvement will contribute not only to improving your own safety record, but also assisting in creating better practices for the whole of the meat industry.

If you have any queries please don’t hesitate to contact me.

Yours sincerely

---

**Paul Sandercock**  
Executive Director  
SA Branch of National Meat Association
Also attached below are:

- the Survey Script for describing the survey to employers and responding to questions.
- A copy of the letter sent to all companies by Paul Sandercock

Greetings, etc. and “You may have seen the letter sent to all companies in South Australia by Paul Sandercock a couple of weeks ago…”

The SA Meat Industry Safety Committee has secured some research money to look at safety cultures in the industry.

This means looking not so much at the nuts and bolts of safety, such as mesh gloves, safety rails and so on, but more how safely people acts and think, and how well companies are set up to support safe thinking in their workforces.

The approach to the study is a proper scientific one, overseen by a university professor, and is designed to look at a sample of companies selected completely at random. Your company’s name was drawn for your sector—and it is important for the research to be meaningful that those selected agree to be involved.

It will not involve a great deal of your time and the benefits could be significant (refer to Paul’s letter). The survey will be conducted a senior person from McPhee Andrewartha—who have been involved extensively in the meat industry when they conducted the national management benchmarking research, the management competencies and the HR management implementation from 1995 to 1998.

The survey is in three parts:

1. To begin the researcher will want to speak to you or someone you nominate to gather some company information relating to safety record, safety policies, and so on. This will take about an hour on the day plus some time before for some information to be gathered (the questions will be sent in advance).

2. Then the researcher will interview a group of managers for one hour.

3. Then the researcher will interview a group of employees for one hour.

That’s all.
This will all happen in September and October. 2–3 months later when the results are analysed, the researcher will make another time to discuss your company’s results with you.

You’ll do it? GREAT!!

Someone from McPhee Andrewartha will phone you to arrange details of when and who.

Things to work out:
1. Who will provide the company safety information?
2. Who will represent managers? Our recommendation is at least whoever runs the site (owner, Plant Manager, General Manager…), another senior manager and a supervisor/team leader (‘Foreman’). Larger companies can also include up to another three managers.
3. Who will represent workers? Our recommendation is that eight to ten workers (6 if the firm is small, up to 12 if the firm is large) are selected to represent a broad cross section of work areas, experience, age and attitude to management. If a union is active, a union worksite rep should be included. Is language is likely to be a difficulty? An interpreter can be arranged, what language would be required?
4. When?
5. Check address details (postal and street if different) and any tricks to location (ask for a map if necessary).
14 September 2000

{Name},
<Address>

WorkCover/SAFER Industries Safety Culture Survey

{Name},

Thank you for agreeing to meet with Graham relating to the safety culture survey.

To confirm, the time agreed is 16th October from 9:30am. The researcher visiting you will be Graham Andrewartha.

Attached is the Data Form for Graham’s discussion with you.

The information sought on the first two pages is some basic profiling data for putting the results in the right context. We have tried to keep this information to the minimum necessary. What we seek is:

1. A basic profile of the company’s employees.
2. The company’s injury record for the last year.
3. A basic profile of the site groups’ participants.

We ask that you complete these first two pages before our meeting and bring it with you to our meeting. If you have any questions about the information requested please phone Michael Correll on 8357 1800.
The other pages will be completed by Graham on the day on the survey. They are included here so you have some knowledge of the areas of interest, and time to discuss any parts you are unclear about with colleagues. **PLEASE DO GATHER** any information or examples, and make any notes that are relevant to each of these areas—as this will greatly speed up the process on the day.

Yours sincerely

---

**Michael Correll**
Senior Adviser
McPhee Andrewartha
Safety Culture Survey Notes

The following are some additional notes to clarify what will occur in the survey on the day agreed.

The survey is in three parts:

1. An Organisational Data Record form is sent in advance for completion of the first page. An interview is then held with you on the day agreed for the survey.

2. A ‘Group’ of Managers—in this case yourself and separately, one (or maybe two?) others—using the Safety Culture Survey form as a focus and also using five open ended questions for discussion.

3. A Group of Employees—using the Safety Culture Survey as a focus and also using five open ended questions for discussion.

Part 1: Organisational Data Record—1 hour

This part is an inquiry seeking factual information relating to some basic organisational statistics and to company policies, procedures and practices relating to safety. It is anticipated that this should be accomplished in all cases within an hour.

Part 2: Manager Site Group—1 hour

There will in most companies be four managers attending this. We have agreed to speak separately with you and one or two of your managers. We emphasise the anonymous and confidential treatment of information provided.

When the Safety Culture Survey is completed and collected, the five open ended questions will be discussed.

Part 3: Employee Site Group

There will be in most companies be eight to ten employees attending this session. The allowable range is five to twelve. We emphasise the anonymous and confidential treatment of information provided.

When the Safety Culture Survey is completed and collected, the five open ended questions will be discussed.
**Appendix 6—Protocol for Safety Culture Benchmark Judgment**

## Protocol for assigning values to cells

The judge will assign a value to each cell of the *Judgment Framework*, reflecting evidence of that cell in the collected data. The value for each cell can be:

0 = Evidence suggests this is done poorly, is seen as being done poorly or is seen as unimportant.

1 = Evidence suggests this is being done acceptably, or is seen as being done acceptably.

2 = Evidence suggests this is being done exceptionally, or is seen as being done exceptionally.

The values in all cells are summed and the simple total is the Safety Culture Benchmark. Beliefs, attitudes and values for each Quality are assessed from the group interview evidence and structures, controls, practices and policies are assessed from organisational data collected.

An evidentiary example for each value for each cell follows.

<table>
<thead>
<tr>
<th>QUALITY</th>
<th>VALUE=0</th>
<th>VALUE=1</th>
<th>VALUE=2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A high level of communication</strong></td>
<td>Safety communication is poor. Safety communication is unimportant.</td>
<td>Safety communication is good—there are regular safety updates. Employees look for updates.</td>
<td>A particular effort is made to ensure that everyone hears and understands safety information.</td>
</tr>
<tr>
<td><strong>Good organisational learning</strong></td>
<td>Accidents happen to other people. There is no need to bother with them.</td>
<td>When accidents happen employees want to examine work practices and suggest changes.</td>
<td>Employees regularly volunteer feedback on processes and equipment that may cause problems in the future.</td>
</tr>
<tr>
<td><strong>A strong focus on safety</strong></td>
<td>Safety is one of those things that you follow when it is convenient.</td>
<td>Working safely is important to me.</td>
<td>The safe work of all my workmates is important to me.</td>
</tr>
<tr>
<td><strong>A senior management that is strongly committed to safety</strong></td>
<td>Senior managers don’t care about anything but quotas.</td>
<td>Senior managers are always balancing production and working safely.</td>
<td>Senior managers work hard to involve employees in ensuring safe work.</td>
</tr>
<tr>
<td><strong>A management leadership style that is democratic</strong></td>
<td>Managers and supervisors give orders—that it!</td>
<td>Managers and supervisors welcome comment and advice on work and safety.</td>
<td>Managers and supervisors actively involve employees in work decisions.</td>
</tr>
<tr>
<td><strong>More and better quality training</strong></td>
<td>Training is a waste of time.</td>
<td>Training is valuable, but there’s so little time for it.</td>
<td>Training is too important to neglect.</td>
</tr>
</tbody>
</table>
**Individual Level** Beliefs Attitudes Values

<table>
<thead>
<tr>
<th>QUALITY</th>
<th>VALUE=0</th>
<th>VALUE=1</th>
<th>VALUE=2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean and comfortable (relative to the task) working conditions</td>
<td>I don’t really care what my work areas are like. My work conditions are poor.</td>
<td>My work areas are usually kept in good condition.</td>
<td>My work areas are always kept in very good condition.</td>
</tr>
<tr>
<td>High job satisfaction</td>
<td>I don’t give a toss about this job</td>
<td>I am good at my job and I am happy to stay doing it.</td>
<td>I consider this job to be my career. I take pride in my quality.</td>
</tr>
<tr>
<td>Workforce includes employees who are recruited or retained because they work safely</td>
<td>People here don’t care about safety.</td>
<td>People here have good work attitudes and safety awareness.</td>
<td>People here take pride in working safety and encourage others to work safely too.</td>
</tr>
<tr>
<td>An informed respect for hazards</td>
<td>So it’s a dangerous job. So what! I worry, I don’t know what to expect.</td>
<td>I understand the hazards and how to work with them safely.</td>
<td>I work always with an eye to understanding the hazards better and I talk to others about my thoughts.</td>
</tr>
<tr>
<td>A just response to mistakes and violations</td>
<td>If you make one mistake here you won’t get a chance to make two!</td>
<td>Normal mistakes are considered indications of a work practice problem. Violations of procedures will get you in trouble.</td>
<td>Mistakes and violations are tolerated and used to make work safer, but deliberate misconduct is dealt with firmly.</td>
</tr>
<tr>
<td>A flexible response to incidents</td>
<td>If it’s not your job—you don’t get involved.</td>
<td>If response isn’t working, you stop and help.</td>
<td>You work out in advance how you might help in a crisis.</td>
</tr>
</tbody>
</table>

**Organisational Level** Structures/ Controls

<table>
<thead>
<tr>
<th>QUALITY</th>
<th>VALUE=0</th>
<th>VALUE=1</th>
<th>VALUE=2</th>
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</thead>
<tbody>
<tr>
<td>A high level of communication</td>
<td>There is no communication structure that includes safety</td>
<td>Safety communication is built in.</td>
<td>Multi-level and two way safety communication is built in.</td>
</tr>
<tr>
<td>Good organisational learning</td>
<td>There is no organisational structure for responding to incidents by changing the status quo.</td>
<td>There is an organisational structure for responding to incidents by changing the status quo.</td>
<td>There is an organisational structure that must be used for responding to incidents by changing the status quo.</td>
</tr>
<tr>
<td>A strong focus on safety</td>
<td>Only the mandatory safety controls are observed.</td>
<td>Safety controls and structures are in place.</td>
<td>Safety controls and structures are in place and their use is required.</td>
</tr>
<tr>
<td>A senior management that is strongly committed to safety</td>
<td>Safety is not a senior management agenda item.</td>
<td>Senior managers meetings regularly examine safety issues.</td>
<td>Senior managers pay is linked to safety performance.</td>
</tr>
<tr>
<td>A management leadership style that is democratic</td>
<td>There is no structure for consultative decisions.</td>
<td>There is a structure for consultative decision making.</td>
<td>There is a structure for consultative decision making and its use is required.</td>
</tr>
<tr>
<td>More and better quality training</td>
<td>There is only a structure for required training.</td>
<td>There is a structure for required and value added training.</td>
<td>There is a structure for required and value added training and managers are accountable for training.</td>
</tr>
<tr>
<td>Clean and comfortable (relative to the task) working conditions</td>
<td>There is no structure for monitoring work conditions.</td>
<td>There are structures for monitoring work conditions.</td>
<td>There are structures for actively improving already good work conditions.</td>
</tr>
<tr>
<td>High job satisfaction</td>
<td>There is no structure for monitoring job satisfaction.</td>
<td>There is a structure for monitoring job satisfaction.</td>
<td>There is a structure for actively improving job satisfaction.</td>
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## Organisational Level Structures/ Controls

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<tbody>
<tr>
<td>Workforce includes employees who are recruited or retained because they work safely and have lower turnover and absenteeism</td>
<td>There is no recruitment structure to consider safety.</td>
<td>Recruitment and induction protocol includes training relating to safety.</td>
<td>There is provision for candidates to be screened out if safety attitude is considered unsuitable/high risk.</td>
</tr>
<tr>
<td>An informed respect for hazards</td>
<td>There is no structure for hazard management.</td>
<td>There is a structure for hazard management.</td>
<td>There is a structure for hazard management and controls requiring its use.</td>
</tr>
<tr>
<td>A just response to mistakes and violations</td>
<td>There is no safety framework for evaluating mistakes and violations—only a disciplinary one.</td>
<td>There is a safety framework for evaluating mistakes and violations as well as a disciplinary one.</td>
<td>The safety framework for evaluating mistakes and violations is the primary mechanism.</td>
</tr>
<tr>
<td>A flexible response to incidents</td>
<td>Only assigned safety people may intervene in an incident.</td>
<td>The most appropriate person at a scene may intervene if the assigned person is unavailable.</td>
<td>The most appropriate person at a scene will intervene.</td>
</tr>
</tbody>
</table>

## Organisational Level Policies

<table>
<thead>
<tr>
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<th>VALUE=0</th>
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<th>VALUE=2</th>
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<tbody>
<tr>
<td>For all qualities</td>
<td>There is no policy.</td>
<td>There is a clear policy (written or unwritten) encouraging quality.</td>
<td>There is a clear policy (written or unwritten) requiring quality as a priority.</td>
</tr>
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## Organisational Level Practices

<table>
<thead>
<tr>
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<th>VALUE=0</th>
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</thead>
<tbody>
<tr>
<td>A high level of communication</td>
<td>There is no regular communication channel to employees on safety.</td>
<td>Safety communication is a regular organised practise.</td>
<td>Safety communication is constant, multi-level and two way.</td>
</tr>
<tr>
<td>Good organisational learning</td>
<td>Accidents keep happening over and over and nothing much changes.</td>
<td>When accidents happen employees are encouraged to examine work practices and suggest changes.</td>
<td>Employees are regularly asked for feedback on processes and equipment that may cause problems in the future.</td>
</tr>
<tr>
<td>A strong focus on safety</td>
<td>Only the mandatory safety processes are observed.</td>
<td>Safety awareness is promoted by managers and supervisors.</td>
<td>Supervisors and managers take a personal interest in the safety of workers.</td>
</tr>
<tr>
<td>A senior management that is strongly committed to safety</td>
<td>Safety is not a senior management agenda.</td>
<td>Senior managers regularly personally examine safety issues.</td>
<td>Senior managers are held accountable for safety.</td>
</tr>
<tr>
<td>A management leadership style that is democratic</td>
<td>Business decisions are not consultative.</td>
<td>Business decisions allow for consultation and employee interest.</td>
<td>Business decisions actively require employee involvement.</td>
</tr>
<tr>
<td>More and better quality training</td>
<td>Only required training occurs.</td>
<td>Value added training occurs when production imperatives allow—it is often scheduled and cancelled at the last minute.</td>
<td>Value added training is an important part of work routines.</td>
</tr>
<tr>
<td>Clean and comfortable (relative to the task) working conditions</td>
<td>It’s an abattoir, what do you expect!</td>
<td>Considerable resources have gone into improving conditions.</td>
<td>Conditions are clearly a priority.</td>
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<tbody>
<tr>
<td>High job satisfaction</td>
<td>So long as production quotas are met, employees can think what they like.</td>
<td>Employee opinions are considered in matters of job satisfaction.</td>
<td>Employees are consulted in matters of job satisfaction.</td>
</tr>
<tr>
<td>Workforce includes employees who are recruited or retained because they work safely and have lower turnover and absenteeism</td>
<td>Recruitment is based entirely on production capability.</td>
<td>Recruitment includes training relating to safety.</td>
<td>Candidates are screened out if safety attitude is considered unsuitable/high risk.</td>
</tr>
<tr>
<td>An informed respect for hazards</td>
<td>There is no systematic approach to hazard management.</td>
<td>A hazard register is kept and used.</td>
<td>Hazard awareness and discussion is a regular event.</td>
</tr>
<tr>
<td>A just response to mistakes and violations</td>
<td>Mistakes and violations are reprimanded regardless.</td>
<td>Reprimand of mistakes and violations is considered case by case.</td>
<td>Mistakes and violations are in most cases considered opportunities for work process improvement.</td>
</tr>
<tr>
<td>A flexible response to incidents</td>
<td>Only people assigned to a response task will work on it.</td>
<td>Other people involved will be permitted to help.</td>
<td>People are expected to help in a response according to their knowledge and expertise.</td>
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</tbody>
</table>
### JUDGMENT FRAMEWORK

#### Company:

<table>
<thead>
<tr>
<th>QUALITY</th>
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<th>Organisational Level</th>
<th>Sub-Total</th>
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<tbody>
<tr>
<td></td>
<td>Beliefs/ Attitudes/ Values</td>
<td>Structures/ Controls</td>
<td>Policies</td>
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<tr>
<th>Safety Culture Total</th>
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2 Judges for each company, circle one:

Michael

Graham
The following are extracts from the interviews across the sample, illustrating typical responses of both managers and employees.

**Company communication is really good**

*Employee:*

We’re meant to have toolbox meetings…last 12 months I don’t remember really having a toolbox meeting. Toolbox meetings have gone away from what they were originally designed for—they’ve spread out to information areas about other things rather than OH&S. Production and those sort of things.

We have a very good memo system, so anything that does come up comes through the memo system. You know, that’ll come through to the supervisor and passed on as verbal, but if it gets a little bit deeper than that, it’s handed to everybody, so everybody’s aware of it.

12 or 18 months ago [name removed] put us through a communication course and since then things are closer between management and staff.

Biggest problem I have with communication is if you have a complaint with someone or about something you go and talk to someone about it, but you never really get a lot of feedback about what’s happening…You can get the ball rolling, but unless you keep coming back to it, then come back and ask.

Not always. Not really. At times, and at times not…there’s always a breakdown somewhere along the line. There’s also people that don’t listen either and don’t want to know, so…

I would go usually true for the slaughter floor, because we have got an incredible grapevine.

The notice board and…we’ve got on our pay slips, if it’s just a statement like we were saying with the policies under review, that’s printed on the pay slips because everybody reads their pay slips…Memos get circled around, they get pinned up on notice boards all through the slaughter floor and you’ve got your main notice board that things get put on.
…we’ve got notice boards there that you can put anything you want to, but if somebody wants you to know something, they’ll just come and tell you. Yeah. I mean, they’re with us all the time, they work along side of us.

**Manager:**

I think we have a lot of forums in which we communicate, we have regular general meetings, the Departments have toolbox sessions…which notice board are we talking about? Well we don’t use that that much, no.

Oh probably 90% of communication is verbal I would say, but we do have memos and things that go around to the supervisors…if there’s a change in rule, or you want to change a way in which we’re gonna do a certain procedure.

I think we have a lot of forums in which we communicate, we have regular general meetings, the Departments have toolbox sessions, ‘Bill’ prints out newsletters. We’ve got supervisors at every level who’ll talk to their employees. Employees aren’t afraid to talk to anybody as well, they know they can talk to anyone so I feel those forms of communication…

We sort of have an open door policy here. A fella can walk in…there’s not much protocol here.

The office door is only closed when the boss is trying to hear on the telephone…

**Employees are encouraged to talk about concerns and new ideas**

**Employee:**

I guess you can probably only speak for yourself, but I’ve got a good relationship with my supervisor…So if I’ve got an idea then…it’ll go through. I mean, you know, whether it comes to fruition or not, well…But the concept’s there

The question about being encouraged to volunteer. No one’s encouraged to give their ideas. You don’t sit down in a meeting…We’re meant to have toolbox meetings…last 12 months I don’t remember really having a toolbox meeting.
In my section we’re encouraged to bring up ideas. It’s only a small section…we may not have a toolbox meeting, but everyday we are talking about—cause there is only 3 of us.

Manager:

I always normally look out for other people and their ideas and whether they’re safe or not. Sometimes I might knock it on the head and say, ‘Look it’s not really a good idea’, and just sort of let them know…

There is a good system for reporting problems, near misses and mistakes

Employee:

Well the system here…probably the near misses might be a little bit grey, but the mistakes and errors, we’ve got all them forms.

I think there is but I think it, some of the paperwork—some of it gets a bit complicated with people that don’t understand it.

Does anyone know where the accident incident forms are kept?

That’s what safety reps are for. You go to your safety rep, and they’ve got all that information….and that’s where sometimes I think it falls down. People might feel comfortable around their safety rep but they don’t feel comfortable going to their supervisor. It all comes down to communication…Sometimes they don’t feel comfortable with their safety rep either. They’d rather see somebody else.

Yeah I’d say so because you’ve got to fill out a report if anything goes wrong or there’s an accident, yeah I think it’s a pretty good system there. Accident reports are always followed up.

For reporting problems, yeah. The near misses…not really. Remember the hassle that we’ve had with those little books. We’ve been trying to get something in place. We didn’t even get to try it, it only got to the talking stage. Yeah. I’ve got a diary I keep, and I fill it in every night when I go home, and it’s mainly what people have told me through the day. That’s my initiative to do it. That’s in case something happens and further down the track and someone says, ‘You never told me’, I can say…
Manager:

Well we’ve got incident report forms, so if someone hurts themselves in any way, whether there’s a cut or a bruise or anything, we document it.

No, they use it, they do use it. Some people, instead of using it, might just verbally speak up if they have a problem or a complaint about an issue but…without going through all the correct procedures, but I think, yep, we’ve got a good reporting system.

I’m not sure what a bad system is so I can’t judge whether it’s good or not! Everybody usually finds out about it really quickly, verbally—in a small place it’s only one area, so you can see it fairly easily.

Safety improvements get put off because of lack of support or money

Employee:

With the equipment we’ve got here, you know, we’ve only got to get a safety switch on one of the machines go and within 24 hours we’ve got the electrician in and it’s fixed.

I mean, something reported today won’t be fixed tomorrow.

Money yeah…Money…Money, is most important. Their hands are tied…They give you support, yeah, but no money. If it doesn’t cost anything they’ll do it.

Manager:

If it’s a physical problem with the company, like if it’s an electrical fault or something like that, we’ll just stop production and get it fixed if it’s dangerous, you know. If it’s something like maybe one of the machines has got a switch on it that’s not making the machine work properly, we’ll assist with that until we can get someone to fix it. But as far as promoting safety, there’s no excuse for not following through. Yeah. I mean you just get your guys to go on with something else until you rectify it.

I think prioritising comes into effect. Safety is on the same level as food hygiene and production and all of that, so there might be an issue that need fixing but it’s not going to be fixed over night…We don’t always throw buckets of money at everything. We have to fix them with a limited amount of funds obviously, but at the end of the day the person or people or whoever’s safety is important.
Actually that’s one of the things that really was a problem with the last safety committee. They didn’t consider the difference between safety and maintenance repair job. Things often are different...they sort of felt they were all in the one. If something needed doing, it wasn’t really a safety hazard, but needed to be done, that that was sort of a big issue then.

No, I totally disagree. You’ve only got to look at the money that’s been invested. It’s a two fold thing, it improves our product, but it also reduces a lot of manual handling injuries, you know, so...

I really see safety as being something that you don’t compromise...a problem with the last safety committee. They didn’t consider the difference between safety and maintenance—it got to the stage where they were using it

**My job is clear. I know exactly what to do to work safely and well**

*Employee:*

I’ve been in this game for 32 years, so, yeah, I know.

Usually the training’s very good here, in the factory we train from the first day you get here until you’ve got it right...you are trained the right way. / In my area, it’s a totally different environment, I trained myself in almost every single machine...I’m not the only one, definitely not the only one.

They also don’t want to give away their trade secrets.

*Manager:*

Oh sometimes they may have a bit of blurred vision, I suppose, because I use them for various things, and they’re getting used to new jobs. Yeah I would say that people are clear about what they’re supposed to do.

I’d say everyone out there would know the basic safety rules. I’m not saying they don’t make mistakes, but they would know the basics of it. Everyone that starts here is given a bit of a talking to. I let them have a good ¼ of an hour, ½ hour to familiarise themselves with the place. / I explain the chillers, the fact that we’re handling blood and fat, and water and cement floors and rubber boots, and the fact that there’s machinery around and cold, slippery floors. So they’ve all got the basics to know their own safety.
Certainly with work instructions, it’s clear, it’s laid out for them in a step by step guide, you know, and they’re certainly made aware of what safety equipment is to be worn.

It starts from the first minute they walk onto the plant, they have an induction. A great deal of time is spent on that sort of thing and it just creates and awareness right from the very first minute they’re here, that safety is a big issue here.

**Management acts in a positive open way on reported problems**

*Employee:*

Yeah…Some make prejudgments.

Depends what the problem is…If I come up with something really serious I might go straight to the top—and results are usually pretty positive.

I’ve never been knocked back if I’ve got a problem, reporting it or seeing someone. Had some heated arguments and discussions, but I’ve never…

*Manager:*

Oh, I think so. I don’t think there’s any need to hide anything. Nothing really gets pushed under the carpet as far as safety and other issues, you know.

Usually. It depends on the person—one that’s finding safety hazards or perceives safety hazards on a regular basis. You know, it’s a bit like the boy who cried wolf, you know, and so it’s not always I would think, received positively, but genuine issues of safety…where things happen or that, you know, they are acted on with a positive intent.

Some people may feel that if you don’t actually agree with them every time that you mightn’t be being open about it or being positive about it, but you can’t agree with everything. I think that all issues that are raised are definitely dealt with and whether it gets the outcome that they wish or not, they are all treated in a positive matter.
The company treats safety mistakes and errors fairly

Employee:

I mean, you know, we’re human beings, we make mistakes. I guess if you make a mistake they’ll probably bring it down to dollars and cents. But…no one goes out of their way because you’ve made a mistake to make life difficult for you.

Not many people get fired…for stuffing up, put it that way, so I think that’s very fair.

They’re over fair to some people around here…I think that it depends on the person who’s made the mistake…There’s some people that continually do the same thing all the time and everybody knows that they’re doing it and nothing gets done…And it mainly happens with their friends.

Manager:

I always give my guys a bit of warning…Well my first thing wouldn’t be to get out the written warnings and give them a written warning, because that’s probably a little bit harsh, but you say, ‘Hey, you know better that that, you know what basically can happen if you don’t’.

I think if you’re putting someone’s safety at risk, people have to be held responsible and accountable for that.

We don’t go around hiding behind things and trying to catch people out. People are always dealt with very fairly.

No they’re pretty good, I mean they don’t jump down your throat or nothing, they just point out in a nice way, look, you know, you’re doing it the wrong way, you know, you can hurt yourself, this has happened to someone before so this is why we do it this way, you know.

Not ‘bad boy, you’re out the door—it a retraining issue. But if it has happened, probably, a couple of…three times, by the same fella, it doesn’t fit type of thing [we may have to take a different tack].

I think in some situations we treat them too fairly. By tightening up we would probably reduce the number of injuries which we do have, so consequently I’d suggest that we are a little bit too lenient in some aspects.
I am very aware of the risks and hazards in my workplace

Employee:

I mean, you get into the meat industry, you’ve got hazards before you even walk into the door.

…cleaning machinery at the end of the day. Some of the guys don’t even think to turn the power off.

I came in one day and there was steam, and someone let the…when the animals fall down we have a little cart we put them on, someone left the cart lying around, I walked through wearing safety glasses, I couldn’t see so of course I just fell over it and—it’s, you know, it’s one of those things where people just finish doing the job, but they leave it and then the next person comes in and we don’t know…we expect everything to be the way we walked out, but….

Manager:

Yeah, that’s one thing that I can probably say that I’m fairly aware…very aware of safety issues…Oh, there are a few people that I’ve got to keep an eye on. Some are a little bit stand off-ish and when it comes to sort of, taking a bit of initiative I suppose, they lack that, so you’ve got to be a little bit careful, especially when it comes to handling a knife.

Common sense, isn’t it?

I’ve spoken to TAFE but while they have formalised training other industries, there’s nothing for the meat industry. People don’t see it as a career based industry, yet people have worked there all their lives.

I control how safe my work is for me

Employee:

I mean, if the machine was thought to be a little bit dicky I mean, if it had to be done, well, the powers that be makes the decision. The supervisor, he would do the operating and he ultimately has got the last say, yes it is, or no, it’s not. But once again we get back to supervision.

You can always say no.
…I’d say others would push themselves, a couple of others would push themselves and push themselves. They don’t even think about it.

occasionally we’ve had issues that are unsafe and the foreman and QU…it’s usually one of them, will perform that task, knowing full well what hazards are involved in it and so that they can accept the risk, basically…we control the area so there’s only the one worker working there. They wouldn’t put it on somebody else to work in that unsafe situation.

I’d say that the younger ones don’t know the risks to start with and I’ve got, again, one foreman that is very fair and that wouldn’t put them there to start with, and the other one just thinks that everyone should just do what he says.

Manager:

I wouldn’t put myself in a position where something’s going to zap me, or, you know, I’m going to get hurt in any way and I wouldn’t expect anyone else to work under those conditions either.

I think the ramifications for doing something unsafe here are a lot higher here than for saying, ‘No, I don’t want to do it’. If you did it unsafely you would be come down on like a ton of bricks, rather than if you say, ‘No, I don’t want to do it’, and then it’s fine.

Certain jobs it’s very hard to eliminate total risk…and what we’re trying to get into the minds of the workers—don’t feel obliged to use the machine [if it’s not safe], turn the bloody knob and get some help and replace the guard. Now they obviously feel in their own minds that they are going to be chastised or whatever if they do that, but we’re fair dinkum about it, if it’s not going, don’t use it. One day maybe that message will sink home and then if production slows down over there, well that’s going to put pressure on getting those things fixed.

People are careful to work safely here

Employee:

I would say most of the time, I mean, probably myself could be guilty of this now and again, I mean, sometimes you will start work and realise you haven’t got your mesh glove on or something like that.

You’re calculating your shortcuts, you’re controlling the shortcuts.
No, not all the time…I’d have to say 90% of the people that work here are pretty safe.

You know, they’ve got their own mind…they’re here to have fun—the odd individuals that like to race up and down ramps with dump bins or that sort of thing.

Manager:

I guess I’ve got a bit of a negative one there perhaps, you know, the night after…when it’s the morning after the night out…hangovers. I think that could influence concentration…But I believe everybody is safety conscious, yeah.

There’s always mistakes happen—people act or do something without thinking…it always happens.

Most of them that have done the certificate course—there’s a safety part of that—they were prepared to then talk about safety issues and how it effects them on the plant.

If someone’s doing something that’s not quite safe they look out for each other.

It still comes down to the person themselves. Some are more safety oriented than others.

My company works hard to prevent accidents from happening

Employee:

How we work is dictated by the quality of supervision. Unfortunately that’s this industry…

Manager:

Oh yeah, for sure. I mean, it’s similar to safety improvements. I think we do as much as we can. Sometimes, I suppose, you sort of think you could do more, but then how far do you go before you start making it too hard for people to understand? You start putting too many things in place and they get a bit, sort of, bamboozled by it. Keep it basic and I mean, most people are willing to cooperate, so we do as much I suppose to promote it as possible.
Well we definitely don’t want them because they cost us money.

I’d say without a doubt, probably always. If we didn’t we wouldn’t be in business for long.

**We’re expected to do what we’re told regardless of safety issues**

*Employee:*

Depends on what the safety is, really. I mean, if there’s a risk of getting injured, then no, you’re not really expected to do it regardless…you’re not going to break a leg or, you know, tip over and fall, but if you keep doing them long enough, you will get a stress injury…At the end of the day, the production must go out.

*Manager:*

I’ve never been told to do something that’s not safe, and I would be very reluctant to tell someone to do anything that was…not safe.

Sometimes it’s very much the individual’s perception of what they say risk is. Like hopping into my car and driving home is putting my life at risk…So it’s the individual’s perception of the issue and sometimes some individuals will say, ‘Oh, God you know, this is a major, major, major issue’, when really it’s not.

If I were to ask, probably 95% of them, to do something which was not safe, they’d tell me no. And the other 5% they’d probably go and do it…and all the others would tell you no way and wouldn’t let them do it.

I think any person that was party…was responsible for that wouldn’t be working here very long.

**I believe my supervisors/senior managers are committed to safety**

*Employee:*

Well yes. I mean, it is in his best interest to be anyway.

When I first started learning the trade, about 15 odd years ago, you know, the supervisors would come up through the ranks and they knew what I done…they knew what it took to do the work and they could set up teams a lot better. These days they’re just work delegators and they’ve got no…Mmm. I think they are. Yes. When the money’s there.
Manager:

Oh yeah, yeah I would say 100%. There’s no excuses for not being in an environment that was safe.

A balancing act between safety and production but I would not believe that they would put anyone at risk…

**Safety rules are clear and well understood**

Employee:

the warning notices, they’re right throughout. They are very good, yes. But once again, it gets back to the amount of supervision.

…the safe work procedures…we found them, they were at one of the old health and safety managers that was here, had left them here and they were 2 or 3 years old, but still relevant and they were in this folder, never distributed. So we’ve found them and distributed them…

Manager:

They’ll say that they’re not clear, but I’ll say that they certainly are, because they’ll certainly use them when it suits them.

Every task on the plant has a SOP. In these are identified OH&S issues.

**I know the safety systems are effective**

Employee:

Yeah, we’ve got them. We’ve got our safety areas, front and back. Possibly one area they could probably improve on is the amount of time it’s trained.

No, but we are doing it and we’re in the process of working out…of doing a bit like a bomb scare type of thing and have the CFS and police come out here to do the whole thing.

We looked at having breathing apparatus, well we did have breathing apparatus out here, but then you have to train people, just to train somebody else into it the next week because they’ve left.
Well we’ve actually got bells and alarms and everything throughout the whole plant, they just…they were never hooked up, so we’re actually looking at hooking them up…

Manager:

Our evacuation program—there is one and they all know about it but it hasn’t been dry run yet.

I am kept well informed of safety and safe working procedures for my area

Employee:

Yes, anything that does happen, or if something comes up out of the ordinary we’re told—whether it’s through written or verbal. I prefer everything in writing. I think it’s an easier way to go….Well, you know, you’ve got Joe Blow that’s operating the machine at the moment and takes two seconds and listen and he goes back to operating machine and what did you say to him? He wouldn’t know in 5 minutes time.

No. Grey area.

Manager:

Yes. Toolbox meetings. We have them at least once a month and that’s on our stats, we certainly are well informed.

This is a good place to work/I am happy in my job

Employee:

I’ve been here nearly 10 years. I guess there is no good place to work in the meat industry any more.

Yeah I love my job.

It’s a good place to work.

I think it’s a great place to work.
There was a stigma attached to meat workers…that they’re all drug addicts and alcoholics and just one step up from the gutter, and if you were a female working in the meat works…you were trash, you were the lowest class that you can imagine [but now] the town attitude’s changed, that we’re not scum.

I honestly have to admit I’ve enjoyed working here…

Manager:

I think generally in the meat game, most people complain about wages, not so much safety…they’re complaining about the money they’re earning, not because they’re worried about safety. I mean, it’s up to them, they’ve got to make the choice, if they’re not going to get any more money they’ve got to make sure that they’re happy staying or move on.

…probably the answer is to say there is no such place.

…you’ll find people enjoy working in an area where the environment is fairly A1. The environ’s right for working and they’re earning their money…. I’d say 50% of people would say they’re not getting enough money…working at something else, they could be earning more money, but the actual job—they would say they like doing what they’re doing.

I had to stand down…and he said, ‘I really enjoyed it, see I’ve only been there a couple of months, but I’ve really enjoyed my time here’.

…and it depend on who’s supervising you too, to create the atmosphere.

Employees are encouraged to actively contribute to safety policy and procedures

Employee:

I mean, you liaise with your foreman or your supervisor and that’s basically where it comes from. We have like a toolbox meeting. They work to a certain extent…but can become repetitious.
Manager:

Yeah I don’t think that anyone’s going to knock back any suggestions from the work force on the floor.

…I mean, they’re encouraged to but probably the mechanism [for involving people…safety committee etc] hasn’t been in place.

And before any policy is put in concrete, it goes to the safety committee for consultation and then to the employees.

Number 21: OH&S training is effective in preventing accidents

Well to a certain extent I guess.

the least problem…with individuals is cuts. They’re not a problem. I don’t see them as a great problem in this industry. You may think it’s strange…because a lot of this stuff cannot be handled mechanically, it’s got to be done physically. And that’s just the nature of the industry.

But I think our injuries have dropped dramatically and I think where our problems are coming from now, more repetitive strain injuries, they’re certainly not the knife injuries. You know, there is the odd one or two, but there’s certainly not the lacerations, there’s not burns we’ve had in the past. Shoulders and the hands and the arms…

What about the meat on the floor and stuff, because that comes under health doesn’t it, you know, like the meat they put on the floor when I got here was the amazing—and in the last year it’s changed completely.

There’s been a lot of training. A lot of training…in the last year.

People’s awareness and people’s intelligence of safety has improved out of sight…

It’s good training but it doesn’t prevent accidents. It would have to be tailored…a lot of it is city orientated or for management or office workers and there gets to be some specific industry like the hospitality or logging or mining or something like that, but for meat works…there isn’t any. I have never seen a [safety] training course that says this is for the meat works.

Well it must be because we haven’t had any. I mean it’s what it’s all about.
Manager:

I’ve done the training and I’m passing it on all the time, it’s all common sense.

Safety is more important than production and keeping costs down

Employee:

Oh no. If I said that now I mean I’ve just wasted my time saying all that, so no.

Well I mean, human beings being what they are, they will take risks from time to time…

I know not everything is perfectly safe but you still gotta run the place. Once again it’s a ‘degree of risk’ sort of thing. Obviously you can’t have things falling off the chain all the time or that gotta be fixed straight away but there are other things that aren’t life threatening and you know life’s just gotta go on.

Again if we stop, the work keeps coming and it builds up and then you’re holding up someone else…production pressures…

There’s juggling, but at the end of the day, somebody comes in and says ‘that’s unsafe’ and, you know, that takes precedence.

Production’s important, but you’ve got to have people the next day to keep working…don’t you? I mean if safety is not done and someone gets injured that day, then the next day they’re not going to be there to do it.

No I don’t think so, I’d say they want the numbers, mate. Safety second, I’d say.

No. It’s on an even keel. Yeah I’d say it’s balanced. It’s not more important…because without the production we’re not here. So I’d say production is the company’s main issue because otherwise, why would they be here? And safety is getting up there. Safety still has to be below cost because without the money…a little while ago, we did an audit and it was acted on and we got SABS 1 and that saved us about $70,000 and that went straight back into safety…About a year ago we changed insurance companies and there was money change over there…and this insurance company gave them about 7 or 8 thousand dollars and that went back into safety training.
Well I mean, you know, production obviously is important, but if you haven’t got the safety, and there’s an accident, productivity is going to be down.

Manager:

…but at the end of the day I think that if you’ve got your area right, safety probably, well the costs don’t really come into it because it’s a cost that you’ve got to outlay anyway. I mean, this is a hard wearing sort of industry I suppose, where things do get worn out and you’ve got to replace them, so it’s the cost you incorporate into part of your operating process. I mean most of the time if anything’s not safe it’s probably injuring the way you produce your product anyway, you know, if your machine’s not working right well then your product’s not right.

As I’ve said before, if there’s a situation that could cause somebody to be injured well then, production would be stopped.

I’d say no. You’ve got to have a balance between the two, you can’t just say, you know, that you’re going to worry about safety and forget about the rest—and vice versa, you can’t do the same. So, you’ve got to be accountable/balanced. I mean, the main concern is getting that production out.

This industry always is a production orientated industry, but I’d say the biggest incentive out there for those fellas is because they’re on a quota system—the quicker you get finished, the quicker you go home.

Yeah it’s a bit of a balancing act, but certainly you’ve got to, certainly have a look at your accidents and incidents and keep them down because you only have to look at the facts and figures and you soon find out that safety is a big factor.

Is it sometimes necessary to break the safety rules?

Employee:

I think sometimes if we’re all being honest, sometimes we all will break the safety rules…the kill floor for example—the committee might say that the kill floor has to wear aprons while they’re marking down or something. Now that all sounds very good in theory because somebody cut their leg once or something, but in practicality, it can be very difficult—it can make the injury worse, or you can make the circumstances worse, you can get more injury…
I’ll give you an example: xxx specifies that on some jobs you have to wear safety glasses for protection [to prevent leptosporosis]. On a cold morning, you can’t see anything and that’s a sight more dangerous than the risk of leptosporosis.

Manager:

There’s always the exception, I mean, I must, you know, I do it myself. I’ll hook up the barrel, I mean they weigh 200 odd kilos and I…me and another bloke lift it up, so we’re lifting 100 kilo each…that’s too much to be lifting…same with shed, we can’t really do…like when it comes to bending, and they say like bend with your knees and go down, I mean it’s impossible for us to do. We might bend over so many hundred times a day and the way it is at the moment, I mean, it would be impossible to do it.

…if an issue arrives with a break down and you have to move something from a to b and it’s only 30 kilos and we shouldn’t be lifting it, but we do it and we’ll…and that’s to keep the place going, you’ve got to…if it breaks down like we stop for a week before we get that thing repaired and everyone’s out of pocket.

I don’t wear rubber gloves when I’m doing the cooking because your hands burn inside the rubber glove and I just, you know. I just refuse to wear them. I scrub and scrub and scrub, but I make sure that my hands are well and truly clean, but I just cannot wear them.

I don’t think you break the safety rules if you compromise the person’s safety. I think that sort of answers it.

What does safety mean?

Employee:

I’m here for one reason. I’m here to make a living so I can do what I have to do for my family and if I don’t work safely and if I’m not working in a safety environment, I’m putting myself at risk. Not only myself, I’m putting my family at risk by not being able to work safely.

Well I come to work with all my parts and go home with all my parts!!

Doing things without getting injured…Not putting other people at risk. Being responsible.

To me safety in practice would mean going home in exactly the same condition that I come to work in.
Manager:

It’s getting the job done, but it’s doing it in a manner that’s not going hurt anyone’s health.

Prevention—preventing injuries to people.

Safety to me is to enter the workplace and go home from the workplace the same.

A safe system at work and I guess to some extent when you relate it to work it means at the end of the day you go home to your family safe with all fingers intact and able to enjoy your family at the end of the day.

Safety is controlling the risks in the best possible way known. Because there’s always an element of risk, but you’ve got to control it.

What happens when concerns about safety are raised?

Employee:

We don’t hear the follow up, it’s either fixed or…something else has come up.

Manager:

The ears prick up. Yeah I suppose you give it a bit of thought and make a decision on the spot. I mean, people don’t normally say things without any reason behind it.

I guess it’s well known that safety is a powerful tool for change. If you want something changed you can say it’s a safety issue and the issue is changed. Thank you very much.

…we had an issue the other day about slippery floors, we know it’s not going to be fixed overnight so we come up with a remedy, you know, we’re throwing salt down there at the moment until we get the floors fixed, so we come up with a joint answer for it. So first of all we identify the problem, then we try and figure out some idea of length of time to rectify it and if it’s going to be, you know, an unsatisfactory length or period of time then we’ll try and come up with a counter measure to keep us going until then.
What happens when mistakes or accidents happen?

Employee:

There should never be mistakes. I mean, accidents do happen, we know that…the first concern if there’s been an accident, it’s the person.

I actually report it myself…I know ‘Dave’ reports it…The foreman have got their diaries and they’ve got an incident sheet…any incident that happens through the day they write it down…that’s all databased down in the QA office…

Manager:

Yeah if it’s a procedural mistake, then verbal or written warnings are in place and the re-education I suppose on what should have been happening in the first place.

There’s an accident investigation team that follows up with a formal investigation and then that safety situation is then analysed. As part of the outcome there might be changes made to a working procedure or a piece of equipment…we have formal procedures.

No formal process [for investigating accidents].

We’ve got our accident and incident forms which we fill out and any problems which are obviously highlighted as a result of those being filled out—supervisory staff are encouraged to find a solution to the problem, whether it’s permanent sort of long term, or short term, it’s certainly addressed on each individual instance and usually it’s addressed immediately and perhaps a long terms solution found later.

How is safety spoken about?

Employee:

Well I think cynicism comes in I guess now and again. I mean if something’s reported and it was not fixed before it happens, you know it’s, ‘Oh yeah, when is it going to get fixed, oh yeah, oh yeah, it’ll get done, yeah, yeah’, but you know…

I think a lot of things go through…the lights off syndrome when they walk into work. And I believe there’s a lot of people that just shut their brain off when they come in.
Yeah, we had a meeting the other day that was fairly positive. We had a meat throwing thing, and now it’s cut it down…

…it’s part of your day. You walk around and somebody hasn’t got a mesh glove on, everybody bounces on them. ‘Where are your ear plugs’ and all this kind of thing.

It is positive from the younger people and from the ones that are changing their ways. From the older people, they put it down…

Manager:

I suppose in the area that I work in, it’s more of an understanding. You learn how to do the job and you sort of stick to that same pattern and then I’ll just pull up anyone that’s starting to go outside that boundary.

In our work force, I think you’re very proud of what people have achieved…proud, so discussion I would say is pleasing and encouraging and something people take pride in…

Football’s more important than safety!

There’s a bit of cynicism involved yeah, but it’s all changing, it’s all changing, there’s a lot getting done now.

[If] people are negative in their general demeanour, they’ll be negative about the safety issues…but from my experience most people seem to view it in a positive light.

Who is responsible for safety in your workplace?

Employee:

Well ultimately everybody’s responsible. I’m responsible and so is the bloke working along side of me is responsible for my safety as much as I am.

We all are. Yourself. Everybody.

You are. Yourself.

it’s the responsibility of everybody and deep down everybody knows that because they all try and work as safely as they can because they don’t want to hurt themselves.
Manager:

I suppose at the end of the day, our QU man and also supervisors, but
directly I suppose it would be the supervisors first

And I’d just like to add that when I first came here a few years ago, the
groundwork for safety was all done and safety doesn’t happen over night,
safety culture doesn’t happen overnight…

Basically the individual, and that’s what we try and make clear to them.
Cronbach’s alpha

A measure of reliability. Looks at a scale of items to determine the extent to which the are related to each other, to assess internal consistency of the scale as a whole. Cronbach’s alpha measures internal consistency, based on the average inter-item correlation.

Factor analysis

A statistical analysis that explores how items relate to each other by identifying clusters of items that are related by the data. These clusters of common items are then given meaning by finding a label that accurately describes them as a group.

Group mean

The average of a group of numbers. For each item of the rating form, all employees and all managers gave a rating. The employee average for that item is the Employee Group Mean. The manager average is the Manager Group Mean.

Guttman’s split-half test

A measure of reliability. This approach splits the scale into two parts and examines the correlation between the parts.

OSHA

United States Occupational Safety and Health Authority

Parallel estimate of reliability

A measure of reliability. This approach assumes that all items have equal variances and equal error variances across replications.

Pearson’s r

A measure of correlation. Pearson’s r measures the strength of a linear relationship between two factors. A value close to one (1) indicates that as one factor changes so does the other—the correlation is close to one. For example, the diameter and weight of glass marbles are clearly related. A value close to zero indicates that they have nothing in common—the colour and weight of marbles is unlikely to be related at all.

Principal components analysis

A step in factor analysis that helps to define how much weight to give each factor derived.

Regression analysis

An analysis that calculates an algebraic equation to describe the type of linear relationship between two factors.

Regression coefficient

The values that describe the relationship between two factors in a regression equation. One coefficient describes the slope—how many steps up for each step forward. The other coefficient describes the y-intercept—a starting value for one factor (eg birthweight cannot be zero grams).

Safety ecology

A term coined as a result of this study to describe a view of safety broader than simply culture or climate.

Sig. (2 tailed)

Significance refers to the likelihood that a particular statistical result represents significantly different groups of values. ‘2 tailed’ refers to this likelihood regardless of whether A is larger than B or vice versa.

T-test (df=102)

A t-test compares two groups of values to determine if they are different, taking into account the variance (spread) of members in each group. The term ‘degrees of freedom (df) refers to the number of values which are free to vary in each t-test calculation.

USGAO

United States General Accounting Office

Varimax rotation

A rotation option in factor analysis. Rotation helps to make clearer distinctions between factors.


Literature Review

Positive Safety Culture: The key to a safer meat industry

“…a poor safety culture will encourage an atmosphere of non-compliance to safe operating practices. Violations are likely to be most common in organizations where the unspoken attitudes and beliefs mean that production and commercial goals are seen to outweigh those relating to safety.”

(Reason 1998, p. 297)

Safety—A General Perspective

The most obvious difficulty in the traditional pursuit of organizational safety is that success is counted by the absence of something—fatalities, lost time injuries, damage to assets and other negative outcomes.

(Reason et al. 1998, p. 289)

There is a thought in the mind of every worker at every level of the organisation, swinging backwards and forwards like a pendulum. When a serious accident or injury occurs the pendulum swings closer to vigilance. When this has the desired result and no injuries or accidents occur for a while, the pendulum swings back to less vigilance and less concern for safety.

Research (Health and Safety Executive 1993) suggests that 441 non-serious injury accidents occur for every serious incident, and Heinrich (1959) suggests that there is only one serious injury for every 330 unsafe acts. Serious accidents are clearly relatively rare, and are thus a poor driver of safety performance. The pendulum of vigilance spends a lot of time over on the ‘less’ side. Rather than rely on injuries to drive safety, it makes sense for the focus of safety performance to be on the behaviour which leads to injuries (Marsh et al. 1995).
Occupational accidents around the world annually number more than 125 million. Of these, approximately 220,000 are fatal accidents! Furthermore, every year 10 million crippling injuries and diseases add to hundreds of millions of workers with disabilities around the world. In many of the rapidly industrializing countries a safety culture (ILO Programme, 1997) and awareness of the positive value of a safe and healthy working environment in terms of economic benefits and social justice are low or non-existent.

(Takala & Obadia 1997)

In Australia, insured and uninsured cost of health and safety problems has been estimated to cost the meat processing industry $330 million a year (Australian Meat and Livestock Industry Policy Council, 1998). Moreover, musculoskeletal injuries related to processing sheep and beef account for 70% of this total cost.

The *Occupational Health and Safety Performance Overview: Meat and Meat Product Manufacturing Industry Australia, 1994-95* (Meat Research Corporation, 1997) lists the clearly most common injuries as sprains and strains (42% of total) and open wounds (24% of total), most commonly caused either by body stressing (42%) or hitting an object (32%). The most vulnerable parts of the body were hands, fingers and thumbs (28%) followed by back (16%), shoulder (9%) and wrist (9%).

In this 1994-95 overview, a comparison of the meat processing industry’s injury/disease rate (occurrences per 1,000 employees) shows a rate for meat processing of 191, meat product manufacturing of 154, pig processing of 108 and poultry of 83—against an all manufacturing industries rate of 47 and an all Australian industries rate of 26!

In South Australia total claims for the sector cost $3.9 million in 1998-99 (WorkCover SA Private correspondence), with the national trend of emphasis on sprains, strains and open wounds closely translated to the local industry.

Workplace injury is always a serious concern, and the Australian meat processing industry, by the evidence of the statistics, has a need to address this urgently.

Heinrich (1959) estimates that 85 per cent of accidents can be attributed to unsafe acts. Various other health and safety studies show that 85 to 98 per cent of all workplace injuries are caused by unsafe behaviour and are due to attitude, behaviour and culture (Dilley & Kliener 1996).
Many research projects and interventions address the engineering and ergonomic aspects of safety (Meat & Livestock Australia Meat Processing Research and Development Information Kit 1999). Indeed these solutions are essential—but not enough. In the last decade it has increasingly been recognised (Carroll 1998, Cheyne et al. 1998, Clarke 1999, Cox & Cox 1991, Gardner 1999, Lee 1998, Pidgeon 1998, Reason 1998, Westrum 1993, Williamson et al. 1997) that behaviour, attitudes and beliefs—in short, culture—is the most important element of safety performance. Reason (1997, 1998) points out that unsafe acts are frequently the product of a combination of organisational factors and local workplace factors (latent conditions) that predispose the worker to act unsafely, or that remove the defences that would stop the unsafe act leading to harm.

Davies (1993) describes the three main causes of industrial injury as unsafe acts, unsafe conditions and attitudes towards safety, arguing that “major improvements will only come by a change in culture and attitudes of all persons” (Davies 1993, p. 4). Blanco et al. (1996, p. 1) also draw attention to the ‘human element’, suggesting “a need to acknowledge that human fallibility is an obstacle to reducing the frequency and severity of incidents.” and also that “concepts such as human fallibility, erroneous actions, latent errors and organizational accidents are still relatively new to many settings”.

This is the context for this review—to examine the work and thought that has been invested in the investigation of safety culture as the key to improved safety performance, and to apply this insight to an examination of safety culture within the Australia meat processing industry.

**Definitions**

Venturing into the areas of behaviour, attitudes, belief and culture is necessarily a journey into imprecision. The clear, clean relationships between problems and solutions possible at an engineering/technology level become murky and unclear as human behaviour enters the equation. Therefore a pause to examine some of the efforts at definition in this area is important.
Safety

Reason (1998) refers to Weick’s (1991) description of safety as a dynamic non-event, observing further that non-events, by their nature, tend to be taken for granted, particularly in the face of continuous and compelling productive demands. Reason (1998) comments that in fact it takes a number of dynamic inputs to create stable outcomes. Consider the feat of standing perfectly still. This is achieved only through a process of constant perceptual feedback and constant small, corrective muscle movements.

What is safe is also very much dependent on contextual factors. Consider the excellent illustration of this provided by Nick Pidgeon:

Consider the problem of dealing with injured passengers from the scene of an accident which still poses an injury (e.g. fire) hazard. It may seem self-evident, from a recovery and rescue perspective, that speedy evacuation to a place of safety, and ideally a hospital, is the first course to take. From a patient care perspective, however, moving an injured person risks exacerbating whatever injuries have previously been sustained. Insofar as different emergency services may hold differing perspectives such as these, arriving at a joint action may demand considerable amounts of negotiation (Borodzicz 1997). In sum, what we think of as ‘appropriate’ for safety under one circumstance may not look so good to somebody else, or in other contexts.

(Pidgeon 1998, p. 204)

A useful perspective of safety, also utilised by Reason (1997), is Rasmussen’s (1986) model which describes human performance in terms of three elements:

1. **Skill-based processing.** The application of routines which are familiar enough for performance to be automatic.

2. **Rule-based processing.** The application of known rules to problems.

3. **Knowledge-based processing.** Novel problem solving, based on the individuals’ mental model of the situation, in which known rules cannot be directly applied.

This framework is valuable in assessing error-based safety breaches, and in beginning to understand the underlying causes of injuries. For example, skill-based errors may relate to a problem in skill and safety training, rule-based errors may relate to problems with compliance to operating procedures (such as a cumbersome procedure, or a cultural or organisational pressure not to comply). Knowledge-based errors will indicate problems as more subtle levels, relating to safety culture, training, employee involvement in decision making and individual abilities.
Culture

Organizational culture is, by its very nature, subjective.

(Gardner 1999, p. 28)

Schein (1985, p. 8) proposes that culture is “a pattern of basic assumptions invented, discovered or developed by a group as it learns to cope with its problems of external adaptation and internal integration.”. According to Kilmann, et al. (1986, p. ix), “Culture is defined as shared philosophies, ideologies, values, beliefs, assumptions and norms.”.

Westrum, (1993, p. 401) addresses culture in terms of an analogy, “By the ‘culture’ of sociotechnical system I mean those habits, folkways, and norms that shape action. ‘Culture’ is to an organization what ‘personality’ is to an individual [emphasis added]…Cultures determine what tasks organizations set themselves, how they address these tasks, how successful they are likely to be in coping with them, and how they will react when things go wrong…”

Safety culture

Dov Zohar (1980), a pioneer in work on safety climate and culture, conceptualises climate in an organisation as a summary of the beliefs and perceptions of employees about safety in the workplace.

For Professor James Reason an informed culture is a safety culture. Reason (1998, p. 293) describes “an ideal safety culture [as] the ‘engine’ that drives the system towards the goal of sustaining the maximum resistance towards its operational hazards, regardless of the leadership’s personality or current commercial concerns. The power of this engine relies heavily on a continuing respect for the many entities that can penetrate, disable or bypass the system’s safeguards. In short, it means not forgetting to be afraid.”

The Confederation of British Industry (CBI 1990) report defines safety culture as ‘the way we do things around here’. In the report on their 1999 survey of safety culture in the Queensland meat processing industry, Wallace & Neal (2000, p. 3) define “Safety culture [as] the extent to which safety in the workplace is valued, and committed to by managers and employees.”.
Weick (1998) suggests that safety culture is of necessity defined by what organisations and their members ‘choose to ignore.’

Citing Cox and Cox (1991), Lee (1998, p. 220) argues that “constructive attitudes among the workforce, because they result from all other contributory features, are probably the most important single index of the effectiveness of a safety culture”.


“…it is culture that lies at the heart of the ideal-typical pattern of events leading up to large-scale failures of foresight...provides the conceptual foundation for an anthropological definition of a safety culture as being the set of assumptions, and their associated practices, which permit beliefs about danger and safety to be constructed (eg Pidgeon 1991, Turner 1991, Pidgeon and O’Leary 1994). Such a culture is itself created and recreated as members repeatedly behave and communicate in ways which seem to them to be ‘natural’, obvious and unquestionable, and as such will serve to construct a particular version of risk, danger and safety.”
(Pidgeon 1998, pp. 205–6)

Pidgeon (1998, p. 207) also cites La Porte (1996), who “comments that a ‘high reliability’ [safety] culture comprises three components. First an organizationally defined intention to provide for reliability and the seriousness of hazards. Second, a set of reliability enhancing operations; such things as structural flexibility and redundancy, dynamic patterns of authority, decentralized decision making and negotiation over local goals, and a continual search for improvement. Third, and overlaying all aspects, are a set of fundamental values; of élan, commitment to ownership of a problem by the person who finds it first, personal responsibility for activities, and a high value placed upon operational knowledge and experience.’”.

Pidgeon (1991) has indicated that a good safety culture has three main components:

1. norms and rules for effectively handling hazards;
2. positive attitudes towards safety
3. the capacity for reflection on safety practice (reflexivity).

Cheyne et al. (1998, pp. 256–7) quotes the third report of the Human Factors Study Group of ACSNI in defining “safety culture [as] the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organization’s health and safety management.” (HSC 1993, p. 23).
Cheyne et al. (1998) also makes a distinction between safety culture and safety climate.

Culture in general, and safety culture in particular, is often characterized as an enduring aspect of the organization with trait-like properties and which is not easily changed. Climate, on the other hand, can be conceived of as a manifestation of organizational culture (Schein 1985) exhibiting more state-like properties…Mearns et al. (1998) propose that safety culture will have an influence on safety climate and it could be argued that a ‘good’ safety culture will be promoted and maintained by a ‘good’ safety climate and vice versa. …climate can be viewed as a temporal state measure of culture, which is reflected in the shared perceptions of the organization at a discrete point in time (Cox & Cheyne 1998).

(Cheyne et al. 1998, pp. 256–7)

Cox and Cox (1991) argue that employee attitudes are one of the most important indices of safety culture and climate, as attitudes are often framed as a result of all other contributory features of the working environment. Lee (1995) also proposes that attitudes towards safety are one of the basic components of a safety culture.

Höpfl (1994) sounds a note of warning about making direct assumptions that organisational interventions in culture change will necessarily have the effect of improving safety. At the broader level, “culture change has been viewed as a means of improving corporate performance by securing greater employee commitment and identification with corporate values.” (Höpfl 1994, p. 3). Höpfl (op. cit., p. 5) examines “the concern [that] the manipulation of corporate culture reduces safety issues to a declared rhetoric supported by artifacts [sic] of a ‘safety culture’ which may, in turn reduce a concern for safety to a cosmetic exercise. In such circumstances, the problem of safety becomes a matter of having ‘appropriate’ methods, manuals and messages. Safety becomes critical to the extent that what is unsafe is concealed by the pursuit of coherent rhetoric and the apparent security of quantification.”

Höpfl (1994) describes corporate culture as having been reduced to:

* an organizational variable, to be manipulated in order to:
  * increase commitment;
  * achieve standardized patterns of behaviours and style;
  * pursue “quality” and “service”;
  * change customer/competitor perceptions; and
  * increase identification with the organization.
However, in relation to safety, the following factors may implicitly apply to corporate culture:

- Corporate culture seeks to order the non-rational aspects of behaviour.
- Behavioural regularity conceals dysfunctional aspects.
- Performance can equate with appearance.
- Local practice may be very different from espoused cultural values and norms.
- Culture may even induce resistance, deviance.
- Culture may become the province of rehearsed rhetoric as opposed to practice.
- Safety may become synonymous with safety artefacts – manuals, audits, quantifications and procedures.

(Höpfl 1994, p. 10)

“A safety culture cannot be set aside”, argues Höpfl (op. cit., p. 10), “from the organizational context in which it resides. A safety culture implies some level of relationship between the corporate culture of an organization and the culture of the workplace. There are many reasons why these two cultures differ. The intention here is not to discredit the notion of a safety culture but, rather, to put forward the notion of a safety culture as an interpretative device which mediates between the espoused values of the corporate culture, that is its declared and desired common values, and the taken-for-granted assumptions of the workplace culture.”

**Safety in the Australian Meat Processing Industry**

Significant energy and resources are being invested in researching and developing safer ways of operating, some examples being:

- researching and developing better equipment (eg assessment of cut-resistant gloves by David Capel; funded by South Australian WorkCover Corporation).
- the risk effects of working in adverse conditions (eg research by Professor Steve Cowley into the effects of work in moderate cold, funded by the Meat Research Corporation), and
- developing better administrative and safety auditing procedures (eg development of a manual handling risk assessment tool by David Nery, funded by South Australian WorkCover Corporation).

Other areas of emphasis include work redesign, noise control, effects of heat discomfort, and ergonomic management of over-use injury risks. There has also been a considerable emphasis on a best practice approach to OHS developing case study sets (The Australian Meat Industry
Occupational Health & Safety Best Practice Project: Ergonomic Best Practice Case Studies from Meat Processing Plants in Australia (MRC 1998) and best practice and continuous improvement frameworks (On Strong Foundations: Meat Industry OHS Best Practice (MRC 1996), Towards OHS Best Practice in the Australian Meat Industry (MRC undated)).

There has however, been relatively little investigation to date on the impact of safety culture on safety record in the meat processing industry. This is in spite of a building body of commensurate research in other industries (for example in Australia, the mining industry—Mining Safety Awareness Surveys (NSW Department of Mineral Resources 1991), Safety Culture Survey Report (Minerals Council of Australia/SAFEmap 1999) and the plastics and rubber manufacturing industry—OHS Survey Report (Boyle 1999)). One example was noted of a safety culture survey conducted within the meat processing industry—a survey of the Queensland industry by the University of Queensland School of Psychology (Wallace & Neal 2000).

This survey involved, from 19 Queensland companies, 296 employees and 13 managers, all of whom completed a survey questionnaire. The principal inferences from their results are that:

- employees are more likely to comply with safety procedures when there is a positive safety culture within the workplace (workplaces that had a poor safety culture had poor compliance with safety procedures), and
- employees are more likely to participate in safety activities when there is a positive organisational culture within the workplace, as reflected in good work relations and morale and in level of control over work.

Wallace and Neal make a number of recommendations including to:

- include of safety objectives in managerial performance appraisals,
- showcase efforts and expenditures for workplace safety,
- conduct regular safety surveys,
- communicate safety-related information in many way including safety committees,
- given employees higher levels of control and responsibility,
- to provide effective safety training, and
- redesigned jobs so that people have the opportunity to work in teams and provide support for each other.
These recommendations reflect in general terms the frameworks that have been offered by a number of researchers in the field.

Andrewartha et al. (1996) reports findings of an analysis of management competencies and organisational culture in the Australian meat industry. Andrewartha (1996, pp. 69–70) reports that, “The findings show…that the MD or the CEO shapes the company culture.” and that “most red meat processing firms tend to have an organisational culture that strongly values compliance with rules and managerial directives, status, which gives less weight to human resource management considerations and which discourages employee participation in decision-making and other forms of organisational change and innovation. The older and larger the firm, the stronger this culture is likely to be.” Also, “this study also suggests that firms in this industry by and large do not possess an organisational culture which encourages the take-up of ‘high performance’ work organisation and management practices, such as multi-skilling, employee self-management and a quality focus.” These are also important characteristics in safety culture development.

**Safety Frameworks**

Assuring that safety occurs is a multi-layered activity. It combines interventions in a number of distinct areas to address distinct risks. The major risks have been summarised (Davies 1993, p. 1) as:

1. unsafe acts;
2. unsafe conditions; and
3. the minds of men (ie attitudes towards safety).

In traditional engineering and administrative approaches to safety assurance, the focus has been on proscribing unsafe acts (through safety legislation, regulation and procedures) and the application of protective design in engineering and of new technologies that are inherently safer.
Increasingly, safety performance is seen as a combination of individual fallibility and organisational factors. In particular, Reason (1997) presents a compelling framework for considering vulnerability to workplace accidents (Figure 1).

There are two aspects to this framework. The first (in the box at the top of the figure) is what Reason describes as the ‘Swiss Cheese’ model—the ever-present hazards inherent in a particular industry are prevented from resulting in losses (injury, death, damage to property) by a series of defences. These defences are, for the most part, either technology/engineering based (better designed equipment—what the job is done with) or administrative (better policies, procedures, QM and audit processes—how the job should be done).

However the most pervasive defence is the cluster of attitudes, beliefs and values the individuals of the organisation hold, the safety culture, and how these govern compliance and violations of procedures—how the job is done!

These defences constantly develop ‘holes’, or weaknesses through which hazards can penetrate (hence ‘Swiss cheese’). Most of the time the multi-layered nature of defences means that if one defence fails another will prevent the hazard from causing damage. However, if there are many holes, a hazard will penetrate.
The second aspect of the Reason model is the hierarchy of factors that contribute to defence breaches. The event that precipitates the ‘losses’ is an unsafe act—an active failure (a violation or an error). However, Reason has described his research over many years that clearly indicates that in most cases, the unsafe act is influenced by local workplace factors and by organisational factors (latent conditions). “The organizational model views human error more as a consequence than as a cause. Errors are the symptoms that reveal the presence of latent conditions in the system at large.” (Reason 1997, p. 226).

Organisational cultures (safety cultures) are pervasive in their influence on human behaviour within the organisation. Safety culture will mediate failures (poor decisions and poor choices of action) at organisational, local workplace and individual operator levels. An effective safety culture will result in few and temporary holes in the defences. A poor safety culture will result in many more holes, as well as holes that remain unaddressed. Safety cultures evolve gradually, in response to local conditions, past events, the character of the leadership and the mood of the workforce (Reason 1998).

There are at least two ways of treating safety culture suggested by the literature, (eg Bate 1992, Thompson et al. 1996):

- as something an organization is (the beliefs, attitudes and values of its members regarding the pursuit of safety), and
- as something that an organization has (the structures, practices, controls and policies designed to enhance safety).

Reason (1998) argues that both are essential for achieving an effective safety culture. Safety culture can therefore be measured as some combination of both of these aspects—for example through attitude and climate surveys on one hand, and safety audits and safety performance statistics on the other hand.

However, it is difficult to intervene at the level of changing beliefs, attitudes and values. Reason (1998, p. 294) argues, “it is hard to change the attitudes and beliefs of adults by direct methods of persuasion.”, so that intervention is best directed at changing structures, practices, controls and policies, which “can lead to [changes in] thinking and believing.” (op. cit., p. 294).
There are a number of frameworks in the literature for addressing the assessment and improvement of safety. Example of these frameworks include:

- Safety Culture Engineering (Reason 1997, 1998),
- Quality Management/Safety Management (Cooper & Phillips 1997),
- Safety Management System (Waring 1996),
- Risk Management Process (Tummal & Leung 1996),
- Engineering (Hazop) (Pitt 1994),
- Behaviour Modification (Marsh et al. 1995), and
- Unintentional Learning (Dodge 1998).

It is worthwhile to briefly examine the contribution each of these can make to an understanding of influencing safety behaviour and outcomes.

### Safety Culture Engineering

Reason (1998, pp. 302–3) describes a framework for engineering a safe culture. This framework is based on the need to engineer five principle characteristics into the organisational culture:

- It needs to be an **informed** culture—one “in which the members of the organization understand and respect the hazards facing their operations” (op. cit., p. 302).

  Pidgeon (1998, p. 205) supports this characteristic. “At the heart of a safety culture is the way in which organizational intelligence and safety imagination regarding risk and danger are deployed (Pidgeon & O’Leary 1994).”

- It needs to be a **reporting** culture—in which people are able and prepared “to confess their own slips, lapses and mistakes.” (op. cit., p. 302). This aspect and solutions for it are also detailed by Harvey (1988).

- It needs therefore to also be a **just** culture—”an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information—but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.” (Reason 1997, p. 195).

- It needs to be a **flexible** culture—in which control over responses to crisis situations can rapidly shift to the people most capable to act appropriately.
Finally, it needs to be a learning culture—"the willingness and the competence to draw the right conclusions from its safety information system, and the will to implement major reforms when their need is indicated.” (op. cit., p. 196). This characteristic is strongly supported by the extensive literature on organisational learning and the knowledge organisation. (See Senge 1990, Dixon 1994)

This latter concept fits well with the observation of Westrum (1993 p. 402) that “For the safety of systems, one must have a culture of conscious inquiry. ‘Requisite imagination’ characterizes the top performers (in safety management).”. Westrum (op. cit., p. 402) provides a representation of how organisations treat information (which extrapolates to how they treat safety-related information). Westrum’s ‘Generative’ organisation correlates to Reason’s learning culture.

<table>
<thead>
<tr>
<th>PATHOLOGICAL</th>
<th>BUREAUCRATIC</th>
<th>GENERATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t want to know</td>
<td>May not find out</td>
<td>Actively seek information</td>
</tr>
<tr>
<td>Messengers are shot</td>
<td>Listened if they arrive</td>
<td>Messengers are trained</td>
</tr>
<tr>
<td>Responsibility is shirked</td>
<td>Responsibility is compartmentalized</td>
<td>Responsibility is shared</td>
</tr>
<tr>
<td>Bridging is discouraged</td>
<td>Allowed but neglected</td>
<td>Bridging is rewarded</td>
</tr>
<tr>
<td>Failure is punished or covered up</td>
<td>Organization is just and merciful</td>
<td>Inquiry and redirection</td>
</tr>
<tr>
<td>New ideas are actively crushed</td>
<td>New ideas present problems</td>
<td>New ideas are welcomed</td>
</tr>
</tbody>
</table>

(Table 1. How organizations treat information, in Westrum 1993, p. 402)

Reason’s five points of safety culture engineering are seen as a particularly important way to represent safety culture and are a major component of the current survey design.

**Quality Management/Safety Management**

In this framework Cooper and Phillips (1997) argue that the objectives of TQM might be better achieved by focusing on and adopting total safety management (TSM).

Cooper and Phillips (1997, p. 4) suggest that “[safety] requires that attitudes and behaviour are taken into account along with the “hard” aspects. This view is supported by established models of human behaviour derived from social learning theory (Bandura 1986), that takes account of the “reciprocally determined” relationship between situations (organization), behaviour (the job) and attitudes (the individual).”
Based on this they put forward a variant of Bandura’s organising framework:

- perceptions about, and attitudes towards, organizational goals
- day-to-day goal-directed behaviour
- presence and quality of organizational systems that support goal-directed behaviour.

From this perspective, the prevailing culture of interest is reflected in the dynamic interrelationships between members’ perceptions about and attitudes towards organisational goals; members’ day-to-day goal-directed behaviour; and the presence and quality of organisational systems to support goal-directed behaviour. Viewing safety culture in this way makes it possible to apply a variant of Bandura’s model to the whole organisation to provide an organising framework for implementation and analyses.

**Safety Management System**

Waring (1996) describes a Safety Management System (SMS) framework that includes:

**Policy, strategy and objectives**

Long-term, permanent objectives might include:

- continuous improvement in the health and safety of employees and others who might be affected;
- minimization of accidents and maximization of avoidable loss;
- reduction in risks through improved technology;
- developing a positive safety culture.

**Organizing, planning and resourcing**

The kinds of activity involved include:

- preliminary risk assessments;
- drawing up hierarchies of objectives;
- identifying the need for lower level planning;
- allocating responsibilities, accountabilities and authority;
- establishing effective communication;
- addressing information and training requirements;
- selection of contractors and arrangements for their control.
Implementation

Implementation is about ensuring that risks are adequately controlled. Control measures typically fall into the following categories:

- engineering controls (e.g. process design, exhaust ventilation);
- organizational controls (e.g. safety co-ordination committee);
- procedural controls (e.g. procedures for plant operation, PTWs);
- behavioural controls (e.g. training);
- personal protective equipment (e.g. hearing protectors).

Monitoring and measuring performance

In addition to casual observation, regular systematic monitoring of a range of performance indicators is required. There are two kinds of systematic monitoring:

1. proactive, which addresses the current conditions and activities;
2. reactive, which addresses past conditions and historical data, e.g. accidents.

Safety audits

Periodic audits are needed which seek to establish any or all of the following:

- Is the SMS as designed and, as operated, capable of delivering health and safety to required standards?
- Is the organization or a particular part of it meeting all its statutory and corporate obligations in health and safety?
- Are the organization’s own safety procedures being followed?
- Are technical safety requirements being met regarding plant, equipment, structures and processes?
- Are the safety performance criteria appropriate and set at the right level?
- What are the strengths and weaknesses of the SMS?
- What could and should be done to rectify shortcomings?
Periodic reviews

Periodic reviews are an iterative process which continue throughout the lifetime of an organisation. There are no hard and fast rules about review frequency and reviews in one form or another will be going on all the time. However, a rough guide is that a formal review of the whole SMS should be undertaken once every 12 months.

Fuller (1999, p. 1) comments on the needs to ensure that the SMS is based on employee-management consensus, arguing that “performance depends not just on management policies and procedures but on the development of effective operational practices, which are appropriate to the working environment and which are also perceived to be appropriate by the workforce implementing them.” Fuller describes the key mechanisms for achieving this as task/workgroups (quality circles), communication (team briefs), consultation (consultative committees) and financial (employee share schemes).

Risk Management Process

Tummala & Leung (1996, p. 7) describe a risk management model for assessing safety and reliability risks, consisting of:

- Risk identification—identification of potential risk factors
- Risk measurement—enumeration of the associated consequences and their severity
- Risk assessment—assessment of the likelihood of occurrence of these consequences
- Risk evaluation—evaluate several decision alternatives based on the risk profiles
- Risk control and monitoring—review of project progress; facilitate periodic communication; consider corrective actions

Within this model Tummala & Leung (1996, p. 5) describe a risk management process:

- risk or hazard identification;
- system hazard analysis;
- ranking of hazards;
- development of action plans;
- risk evaluation; and
- risk control and monitoring.
Engineering (Hazop)

Pitt (1994), draws attention to an existing engineering tool for assessing hazards, the tool known as “Hazop” (or hazard and operability study).

Pitt suggests that there are three main aspects to any failure, and puts the questions:
1. What can go wrong?
2. What is the chance of it happening?
3. What are the consequences if it does?

Pitt maintains that “you can only assess and deal with those hazards you have recognized, and sophisticated mathematical methods will only refine those assessments. The success of Hazop has been in helping to recognize hazards by applying a formal procedure.” (Pitt 1994, p. 2)

Hazop is simply described as follows:
• Describe the process.
• Break it down into smaller operations for consideration.
• For each operational unit, determine its intention.
• Apply a series of guide words to see how that intention may be frustrated.
• For meaningful deviations from the intention, look for possible causes and likely consequences.
• Consider possible action to remove the cause or reduce the consequences.

Behaviour Modification

Marsh et al. (1995) Describes the development of a behaviour-based approach to management of safety, using goal-setting and feedback methods. They report that goal setting and feedback can produce large improvements in safety performance where the commitment of site management exists.

Marsh et al. (op. cit., p. 5) describe three elements to behaving safely:
1. the knowledge of how to operate safely;
2. the equipment to operate safely; and
3. the motivation to operate safely.

The authors suggest that information and motivation campaigns designed to improve safety through increased safety consciousness have not been consistently successful, and incentives have been successful but
expensive, and are apt to discourage operatives from reporting accidents and near misses. The use of disciplinary action has shown limited success. They suggest instead, a behavioural approach using goal setting and feedback.

Marsh et al. (op. cit., p. 5) assert that Goal setting and feedback have already been shown to be of value in safety, citing McAfee and Winn (1989), Chhokar and Wallin (1984) and others.

**Unintentional Learning**

Dodge (1998) suggests that unintentional learning has practical implications in the field of occupational health and safety, that can be addressed at the level of culture change. He suggests that “a large body of ‘unintentional’ learning exists within the workplace which is not the result of conscious decisions and lacks critical reflection on the possible outcomes.” (Dodge, op. cit., p. 1).

Unintentional learning is the continuous learning of experience of life—the child who learns not to touch things that are hot is a simple example.

> Unlike more formal learning, the lessons from our experiences are not planned or intentional. They are not the result of a well formulated learning program, yet they have a powerful, often unconscious impact on our attitudes, beliefs and behaviors.

(Dodge 1998, p. 2)

When learning is inherent in the actions or statements of an individual, Dodge describes, the learning which results as a consequence may be both unintentional and unplanned. In the workplace, actions and comments of both managers and peers are a powerful learning force which may be used informally to affect behaviours. The process is not an “intentional” learning program and the learning component may go unrecognized by one or other of the parties.

What are the assumptions workers and managers make relative to health and safety in the workplace and where did those assumptions originate? Often, Dodge suggests, from unintentional learning.

Counteracting unintentional learning requires that all stakeholders take an active part in defining their planned learning activities, while also staying alert to and seeking out the subtle contradictory learning that may exist within the workplace or in the larger society as a whole.

> Well-intentioned learning programs must go hand-in-hand with critical reflection and positive cultural expectations for worker safety by workers, managers and the public.

(Dodge, op. cit., p. 18)
The Reason Model of Safety Culture

Having described a number of the ways in which occupational safety has been approached in recent years, a more specific focus is taken on the model of safety culture described by James Reason and picked up by others. This appears to be a very practical approach that has the advantages of not being too deeply rooted in a specific industry, and of taking a broad view.

Most organisations that have occupations within them that are hazardous, develop (or are obliged to develop) multilayered defensive systems. These are a combination of technical and engineering solutions (plant design) and administrative solutions (policies and procedures that define how people must behave, and audit/monitoring processes to manage compliance).

“Because of their diversity and redundancy, the elements of a multilayered defensive system will be widely distributed throughout the organization. As such, they are only collectively vulnerable to something that is equally widespread. The most likely candidate is safety culture. Only culture can affect all the ‘cheese slices’ and their associated holes.”

(Reason 1998, p. 297)

Reason (1998, p. 297) suggests that all the ways in which a poor safety culture can adversely affect protection “stem, directly or indirectly, from a failure to understand and fear the full range of operational hazards.” These are:

1. An increase in the number of defensive weaknesses due to active failures (through factors such as insufficient concern about working conditions, inadequate training, poor communication, bad procedures and problems with the design of the man-machine interface).

2. An atmosphere of non-compliance to safe operating practices (where the unspoken attitudes and beliefs mean that production and commercial goals are seen to outweigh those relating to safety) will lead to both active failures and latent conditions (e.g., non-compliance during maintenance and testing, provision of inadequate equipment).

3. An unwillingness to deal proactively with known deficiencies in the defences—defensive gaps are worked around and allowed to persist.
Unlike a nuclear power station or a space shuttle, where one accident may happen in 20 years, but its effects are catastrophic, it is the repeated incidence of similar, individual accidents and injuries that is the most critical for the meat industry. Reason (1998, pp. 300–1) describes that in every recurrent accident scenario, there are at least three elements:

- **Universals**
  These are the ever-present hazards associated with a particular domain of activity. It is unplanned contacts with these universals that do the actual damage.

- **Local traps**
  These are characteristics of the task or workplace that, in combination with human error and violation tendencies, lure people into repeated patterns of unsafe acts or less-than-adequate performance.

- **Drivers**
  But if there is a path before me does it necessarily follow that I must go along it? I also require a motive determining my choice and, further, some force to propel me forward' (Freud 1922: 36). A similar argument can be applied to the local traps in hazardous operations. Their mere existence is insufficient to explain why people are repeatedly—but not invariably—ensnared by them. The argument to be offered here is that, in hazardous work, this motive force is derived from an organization’s safety culture—or, more specifically, from an unsafe culture.

Drivers are important in the balance of risk avoidance with pressure to get the job done no matter how. Factors in this will include time pressure, cost-cutting, indifference to hazards and pursuit of commercial advantage.

Drivers will lead to the generation of violations (clear intentional breaches of procedure) and errors. Reason et al. (1998) describe errors and violations, categorising them into:

1. **Unintentional Errors**: caused by gaps in skill/knowledge or by distraction/lapses in concentration.
2. **Culpable Errors**: not intentional in themselves but the lead up behaviours are reckless (eg ‘drink then drive’).
3. **Routine violations**: corner-cutting, often at a habitual (not conscious) level.
4. **Necessary violations**: precipitated by inadequacies in equipment or workplace procedures.
Characteristics of low accident plants

Lee (1998) picks up on the direction taken by Reason, and goes on to discuss the traditional approach to addressing safety issues. That is, the traditional organisational solution of “devising a regulation if [addressing] an unsafe act or a technical solution if [addressing] an unsafe condition”. Lee asserts, “socio-technical systems now change so rapidly that precedents [prescribed regulations and technical solutions] quickly become redundant.” (Lee 1998, p. 218).

Lee puts forward an approach based on the (reasonable) assumption that low accident plants probably also have better safety cultures. He lists (Lee, op. cit., p. 219) the characteristics of low accident plants as having:

- A high level of communication.
- Good organizational learning.
- A strong focus on safety.
- A senior management that is strongly committed to safety.
- A management leadership style that is democratic.
- More and better quality training.
- Clean and comfortable (relative to the task) working conditions.
- High job satisfaction.
- A workforce composition that includes employees who are recruited or retained because they work safely and have lower turnover and absenteeism.

Lee lists nineteen attitudes towards safety structured within nine domains (Lee 1998, pp. 223–5):

**Safety procedures**

- Confidence in safety procedures

**Risks**

- Personal caution over risks
- Perceived level of risk at work
- Trust in workforce
**Permit to work system**
- Confidence in efficiency of PTW system
- General support for PTW system
- Perceived need for PTW system

**Job satisfaction**
- Personal interest in job
- Contentment with job
- Satisfaction with work relationships
- Satisfaction with rewards for good work

**Safety rules**
- Personal understanding of safety rules
- Perceived clarity of safety rules

**Training**
- Satisfaction with training
- Satisfaction with staff suitability

**Participation**
- Perceived source of safety suggestions

**Control of safety**
- Perceived source of safety actions
- Perceived personal control over safety

**Design of plant**
- Satisfaction with design of plant
Measuring Safety Culture

The relationship between a positive organizational culture and positive safety performance is unequivocal.

(Richard Gardner 1999, p. 26)

Organizational culture is, by its very nature, subjective. Any assessment process must be designed with this in mind (Gardner 1999).

Measurement of safety culture mostly has relied on two measurements, the key performance indicator (lost time accident rates, backlog in technical modifications) and the safety audit (what elements of a safety management system are in place). Lee (1998, p. 235) argues that safety surveys should augment but not replace these.

At the heart of intervention in safety cultures, under most frameworks, is a method for measuring and monitoring safety culture. For the most part, this has been attempted by use of a culture survey. The nature of the survey process has varied, and involves three approaches:

- traditional paper and pen questionnaires putting a series of questions or statements and requiring levels of agreement,
- a group administered verbal presentation of statements requiring a forced-choice button press (ie using computer technology—used by SAFEmap) to allow for variable literacy levels,
- an interview approach, collecting data by direct questioning.

The paper and pen questionnaires predominate in the literature. Some of the approaches to survey construction are summarised below.

An interview survey

Gardner (1999) used a ‘structured sensing interview’ to collect data, arguing that the use of face-to-face interviews result in a more comprehensive understanding of respondents’ thoughts and feelings—interviews enable respondents to explain why they rate an item in a context.
In the interview process, Gardner had each interviewee rate each assessment item on a scale of 1 to 10. Respondents were encouraged to expound upon their answers and provide illustrations to clarify their ratings.

Gardner (1999) lists a set of factors in Organisational Culture that have a positive correlation to safety performance. They are:

1. The degree to which individual employees believe themselves to be an important part of the organisation.
2. Organisational support and value for personal and professional development, education and training.
3. A safe workplace.
5. Management/system responsiveness to reported problems.
8. Employee involvement, participation and input.

A similar list of negative correlations is:

1. The degree to which employees believe their performance to be less important to the organisation than other values such as compliance, and conformity.
2. Company behaviours that discourage flexibility, risk, innovation performance.
3. Exhortation to quality/safety improvement without concomitant support/investment.
4. Political infighting and dissent at management levels.
Modelling safety climate

Cheyne et al. (1998, pp. 263–264) describe a written 74-item questionnaire survey instrument which has five sections:

- Section 1—Demographic information
- Section 2—The physical work environment
- Section 3—Hazards checklist
- Section 4—Attitudes to safety
- Section 5—Safety activities

The data from this survey is used to generate the following five factor model (Cheyne et al. 1998):

- Safety management
- Communication
- Individual responsibility
- Safety standards and goals
- Personal involvement

Cheyne et al. (1998, pp. 267–8) also note:

- Workplace hazards appear to have no direct effect on levels of safety activity.
- The better the perceptions of standards are, the easier it will be for workers to be involved in safety.
- Workers reporting a more satisfactory physical work environment also report fewer and/or less severe workplace hazards.

Cheyne et al. (1998, p. 268) identify “managers, and their actions and commitment, as a key group in which to begin influencing and improving attitudes to safety and, in turn, levels of safety activity.” They go on to suggest that “restructuring of safety communication systems and the foundation of employee participation programmes would also impact on safety climate and perhaps help to develop a participative organizational culture for safety.”.
Employee attitudes to safety

Cox & Cox (1991) identifies four different groups of objects studied in relation to attitudes to safety:

- safety hardware and physical hazards
- safety software and concepts
- people
- risk.

From these, they a survey based on a written questionnaire in four parts is constructed (Cox & Cox 1991, p. 102):

1. Attitudes to good safety practices
2. Attitudes to the company’s safety philosophy and culture
3. Perceptions of the company’s commitment to safety. Attendance at ‘family safety days’
4. Suggestions for improving attitudes to safety

This survey included 22 items and a free response section (the last section).

The data from this survey yielded five safety factors (op. cit., p. 103):

- Personal scepticism
- Individual responsibility
- Safeness of work environment
- Effectiveness of arrangements for safety
- Personal immunity

Mining safety awareness survey

NSW Department of Mineral Resources conducted a series of surveys in 1991 using a written questionnaire of 105 questions. Sections included:

- Safety systems and planning for safety
- Safety and the way work is organised
- Safety and training
- Safety and equipment
- Causes of accidents and injuries
- An additional set of specific questions relating to underground mining.
The data from this study was extensive, and some of the main points of importance (NSW Department of Mineral Resources 1991, pp. 14–16) are:

- A rapid response to safety problems.
- Recognition of safe working practices.
- Senior management has a clear role in safety awareness.
- Planning of safety and other systems needs to be done by people with practical experience.
- Safety training needs to happen, needs to be practical and locally relevant, and needs to be refreshed regularly.
- Safety training needs to begin at induction and to include managers and supervisors.
- Safety audits needs to be regularly conducted by supervisors.
- Equipment design is a critical factor in safety.

Mining Safety Culture Survey

The Minerals Council of Australia (1999) reports a survey of 7,100 employees across 42 mines, using SAFEmap Profile-R. The Profile-R survey uses an electronic technology wherein participants attend in groups of 16 and are read a series of statements. To each statement each participant must indicate agreement or disagreement/neutrality (Kuder forced choice format).

The SAFEmap model consists of eight sections (Minerals Council of Australia 1999, p. 15):

- Organisation (the company)
- Management (senior managers)
- Supervision (the direct supervisor)
- Management systems (formal systems)
- Safety systems (issues for safety management)
- Job factors (perceptions of job related issues)
- Team factors (perceptions of peer group influences)
- Individual factors (individual attitudes and perceptions)
Across the eight sections are 41 factors, for example, *Organisation* factors include ‘Commitment’, ‘Policy’ and ‘Leadership style’, *Management* factors include ‘Credibility’, ‘Commitment’ and *Safety systems* factors include ‘Safety staff’, ‘Safety rules’ and ‘Training’.

SAFEmap makes a functional distinction between ‘safety culture’ and ‘safety climate’, allocating the first five sections as contributing to culture and the last three to climate.

The Mineral Council (op. cit., p. 4) report suggests that responses to the safety culture factors were very positive at Manager levels, less positive but still high at Supervisor and Specialist Staff levels, but were considerably lower at Operator levels. Most of the negative responses were on issues such as Job Security, Risk-Taking and Fatalism.

Weaknesses identified within the culture/climate include management credibility, unclear responsibility for safety, lack reward and recognition for safe work, effectiveness of safety systems/programs, attitudes to risk-taking, consultation (safety committees) and fatalism (defined as the achievability of ‘zero accidents’).

Fatalism is suggested to “play a very substantial role in the occurrence of risky behaviour…The full scope and impact of this factor on risk-taking behaviour is not yet fully understood and may require further and in-depth research.” (op. cit., p. 37).

**Safety Attitude Questionnaire Scale**

Donald and Young (1996) describe a written questionnaire comprising 18 scales, in the context of a survey—a programme of safety improvement initiatives—and a re-survey and assessment of safety performance change. Donald and Young (1996) also correlate responses to the questionnaire with lost time, all accident and self-reported accident rates, reporting that, with the exception of two, all scales correlate with these accident rates at statistically significant levels.

They began with a series of individual interviews and focus group sessions, then progressed to the safety attitude survey. The scales Donald and Young employed were:

1. Management/supervisor satisfaction with the safety system
2. Management/supervisor knowledge of the safety system
3. Management/supervisor encouragement and support
4. Management/supervisor safety enforcement/pressure
5. Personal contact with management/supervisors
6. Management support for safety meetings
7. Worker satisfaction with the safety system
8. Work environment: hardware
9. Workgroup encouragement and support
10. Workforce training
11. Global self-safety
12. Meetings
13. Safe working procedures
14. Safety information
15. Safety representatives’ practice
16. Safety representatives’ authority
17. Section leaders’ practice
18. Section leaders’ knowledge and satisfaction with the safety system

The Offshore Safety Questionnaire

Mearns et al. (1998) describe a written survey conducted in 10 installations, consisting of six sections generating 176 variables. The factors of work safety measured include:

- Work pressure.
- Work clarity.
- Job communication.
- Safety behaviour—half of the respondents found it necessary to ‘occasionally’ commit unsafe acts and procedural non-compliance.
- Job security.
- Risk perception.
  - ‘Hazards to the installation’
  - ‘Occupational hazards’
  - ‘Catastrophes’
- Assessment of safety.
  - ‘Accident Prevention’
  - ‘Incident Mitigation’
  - ‘Emergency Response’
Safety attitudes.

• ‘Speaking up about safety’
• ‘Attitude to violations’
• ‘Supervisor commitment to safety’
• ‘Attitude to rules and regulations’
• ‘OIM commitment to safety’
• ‘Safety regulation’
• ‘Cost versus safety’
• ‘Personal responsibility for safety’
• ‘Safety systems’
• ‘Over-confidence in own safety’

Accident history.

Safety perceptions and attitudes

Williamson et al. (1997) describes a self-administered, 67 item questionnaire given to 1560 employees across seven workplaces. Factors included in the questionnaire include:

1. Safety awareness
2. Safety responsibility
3. Safety priority
4. Management safety commitment
5. Safety control
6. Safety motivation
7. Safety activity
8. Safety evaluation

As a result of this data, Williamson et al. (op. cit., p. 21) list five factors that are crucial for safety perception and attitude:

• Personal motivation for safe behaviour
• Positive safety practice
• Risk justification
• Fatalism
• Optimism
Williamson et al. report that “the strongest factor was Personal motivation for safe behaviour, reflecting the perceived deficiencies in the workplace which prevent respondents from acting safely.” (Williamson et al. 1997, p. 24).

Changing Safety Cultures

Creating a safety culture

Development of a safety culture should not be viewed as a separate process, but one that forms an integrative part of the wider organisational culture (Clarke 1999). Rogers (1995) suggests that it takes one to five years to change a culture, so that safe behaviour becomes second nature or ingrained, but that specific behaviours can be changed in a quarter of that time through rewards and disincentives.

Pidgeon (1998, p. 205) suggests that “there is an unacknowledged paradox at the heart of many discussions of the topic, in that culture can act simultaneously as a precondition both for safe operations and for the oversight of incubating hazards.” The implication of this is that, perhaps, it is not desirable to strive for too uniform a safety culture across the entire organisation. The existence of some safety sub-cultures may produce enough constructive tension to ensure that oversights and complacency seldom occur.

Carroll (1998) emphasises the broader role of safety culture surveys in helping to shape and sustain a healthy safety culture. By asserting “that their use for assessing and measuring safety culture, although important in many contexts, is problematic without companion activities that connect questionnaire responses to the specific context of the setting, its history and particular challenges.”, Carroll flags that simple reliance on surveys will not generate cultural change. It is also necessary to build in a range of other measures and other activities that promote thinking and acting in new ways.
Employee involvement

The single most favourable response was that 99% of respondents agreed that ‘Safety and quality are as much my responsibility as anyone’s.’

(Carroll 1998)

Ramsay (1991) states that greater employee involvement should provide part of a coherent and linked management program and identifies a number of important factors affecting the success of employee involvement initiatives:

• senior management commitment;
• middle and lower management support;
• definition of the initiative’s objectives;
• appropriate training and time available for those involved;
• monitoring the scheme’s implementation; and
• provision of information and consultation on the process.

However, Pidgeon (1998, p. 208) warns, “if the power relationships [within the company] emphasize secrecy, exclusion, and the ‘need to know’, (sub)cultural exclusivity and blocks to learning are the more likely result.” This may have particular relevance to the meat industry, which in many cases is still reactive and closed in its management style (Andrewartha et al. 1996).

Another important cause of failure of initiatives to achieve greater employee involvement is resistance to change (Hellriegel et al. 1989). This has certainly been true in the meat industry, with ‘old hands’ unwilling to let go of old ways of operating (for example, knife care) even when the new procedures are safer and as efficient.

Accountability: dealing with mistakes

85% of respondents agreed that ‘Too many people at the plant are worried about being blamed for mistakes’.

(Carroll 1998)

Pearn, Mulrooney and Payne (1998) advocate an approach of accepting mistakes and harnessing their power to stimulate learning. Essentially, they are describing a learning process using mistakes as a ‘frame of reference’. Pidgeon (1998, p. 212) points out that it is important not to try to create a no-blame culture, “but one which establishes the boundary between culpable and tolerable mistakes, in a way that the latter category is as inclusive as possible, and while at the same time still retaining some degree of responsibility and accountability.
Dilley & Kleiner (1996, p. 278) describe a positive approach to discipline as being essential for creating a safety culture of high trust and employee involvement. They list six key aspects to a positive discipline approach:

1. Achieving employee involvement/treating the employee with respect.
2. Objective observation of present behaviour and current issues.
3. Evaluation of current behaviour.
4. Creation of a positive plan for action.
5. Confirmation of employee agreement and commitment.
6. Realisation by the employee that an accepted agreement is not negotiable.

**Senior management**

There are two aspects to senior management involvement that may be of importance. The first is that, although positive safety attitudes at senior management level are essential in developing a positive safety culture, it cannot be assumed that such attitudes will cascade through the organisation. Senior management’s attitudes and actions may be subject to negative stereotyping by staff and supervisors (Clarke 1999).

Secondly, it cannot be assumed that senior management commitment to safety is either present or clearly communicated to employees through actions. Carroll (1998) finds that 50% of respondents disagreed that ‘Senior Management expectations for safety are clearly stated and consistent with performance reviews, rewards and punishments’ and 50% agreed that ‘Senior Management makes workers feel uncomfortable about raising concerns.’

**Organisation level interventions**

**Recruitment**

Recruitment is a neglected focus of safety culture development in most industries. At the sharp end of recruitment, the sole focus is mostly on technical or practical suitability for the work, and more often on ‘fit’ with the team or broader organisational culture. However, for hazardous industries, a greater focus on safety behaviour and safety attitudes may be also and important selection criterion.
Andrewartha et al (1996, p. 68) makes a specific recommendation of the use recruitment as a strategy in the meat industry to “Develop and implement greater diversity in managers…Our study strongly indicated…that because of the culture, it was not normal practice to appoint managers based on informed and defined merit. Seniority, toughness and connections are still the major variables in management selection in most places.”

**Stress from inside and outside pressures**

Stress responses in individuals can be physical (eg increased incidence of common infections, allergic reactions such as dermatitis, increased muscular tension, increased blood pressure) and psychological (eg increased distractability, inattention, preoccupation with other matters, quickness to anger, impatience). These responses can equally be brought on by work pressures (eg interpersonal conflict, production related time pressures) or outside pressures (eg family or financial difficulties).

Whatever the cause, the effect is a greater vulnerability to hazards. Therefore, addressing employee stress reactions and causes of stress is an important preventive strategy. This may include access to some form of company sponsored employee counselling.

**Low literacy**

Low literacy has been a major concern in manufacturing (GMHAL, private correspondence) and some service industries (Dilley & Kleiner 1996) for many years, and has been indirectly attributed to a number of workplace injuries, because of communication breakdowns and poor understanding of written hazard warnings and procedural lists.

When this is compounded by low English-speaking ability, as is the case for many employees in the poultry sector, the impact on safety risk can be significant. For these people increased literacy is an important part of creating a safety culture.

**Workplace morale**

There appears to be a clear association between workplace morale and safety performance (eg Ansari & Modarress 1997, Dilley & Kleiner 1996, Wallace & Neal 2000). Some authors have attributed greater workplace morale to better safety levels, others the improved safety performance to better workplace climate and morale. The reality is likely to be that each is dependent on the other in a feedback loop.
In any case, efforts to improve workplace morale are likely to be reflected in a more positive safety culture.

Claims management is also a part of this, as the way in which work injuries are handled by the company will be recognised by employees and will contribute to the overall impression of management attitude to safety, and therefore to general morale. Two key elements of claim management are the immediate stabilisation an injured employee’s condition by expediting medical treatment, and regular personal contact and support by the employee’s immediate supervisor and manager, and encouragement for an early return to work.

**Safety values**

Eckenfelder (1998, pp. 20–21) lists a set of safety values that need to be assessed, encouraged and reinforced.

1. Do it for the right reasons
2. See it as part of the whole
3. Recognise there is no end
4. First, it is a people business; things are a distant second
5. Put the right person in charge
6. Use a yardstick everyone can read
7. Sell benefits—and they are many
8. Never settle for second best
9. Be guided by logic, not emotion
10. Empower others rather than seek after support

Eckenfelder describes a continuum of organisational practices relating to each value, from practices representing ‘dark ignorance’ (eg safety driven entirely by regulation and cost) to ‘full light perfection’ (eg sincere concern for employees drives safety). The list is suggested as a trigger for discussions about safety values that cause changed awareness and therefore shifts in values.

Carroll (1998, p. 281) also supports the approach of using a dialogue to create a safety culture: “if the survey is a genuine effort to reach mutual understanding, to open dialogue among multiple levels of hierarchy and groups of employees, and to work together for effective change, then it can play an important role in creating and sustaining a healthy safety culture.”
Prevention

An effective approach to prevention is a central plank in any safety culture. The main areas in which preventive strategies can occur are:

- **Environmental**
  
  This includes working conditions (heat, cold, humidity, and so on) and could also be extended to include peer relations, industrial environment and other ‘social’ factors.

- **Biomechanical**
  
  It is this area that most effort has been invested, from plant and equipment redesign (chain gauntlets, carcase lifters) to process redesign to reduce repetition and lifting strains.

- **Safety training**
  
  The payoff from training can be enormous. Motorola, for example, spends about 3 per cent of payroll costs on training. For every dollar invested in training programs, the company receives 33 dollars back in the form of better product quality, higher productivity, less waste and safety process improvements (Ansari & Modarress 1997)

- **Policy**
  
  Policy is the foundation of all other actions. Reason (1997, p. 147) presents a simple model illustrating this:

  - the *influencing* factor level: this includes the unsafe acts or technical failures immediately responsible for the event,
  
  - the *performance-influencing factor* (PIF) level—these are the immediate workplace conditions that shape the occurrence of human or technical failures,
  
  - the *implementation* level—these are the underlying organizational factors that create PIFs,
  
  - the *policy* level—this comprises the policy and regulatory factors that determine organizational processes occurring at the implementation level.

  A brief illustration: A policy may be (and quite often is) to use cost as the controlling criterion in sourcing new and replacement equipment. The implementation of this is that quotes are obtained and the cheapest quote is always accepted. As a result, workers may be operating with shorter gauntlets. Operator ‘A’ was kept awake by his young child and loses concentration. The knife cut his forearm, where a longer glove may have prevented injury.
• Legislation

APESMA has stressed the need for strong legislation to encourage employers to treat OHS as a necessary and critical feature of doing business (Parsons 2000), and this is undeniably true. Parsons (2000) asserts that regulation is the single most important driver of improved performance in OHS in the workplace:

Some employers believe that adopting/developing, implementing and maintaining good OHS policy has a commercial benefit. Others see OHS as a cost and comply if/because they must.

(Parsons 2000)

Reason (1997, p. 172) also recounts from history a series of outstanding successes of legislation and regulation in improving safety.

However, it also needs to be recognised that external regulation (for example in South Australia, the Workers Compensation and Rehabilitation Act, 1987 and the Occupational Health, Safety and Welfare Act, 1986) has limits. This is particularly so in promoting a safety culture, which implies an awareness of factors leading to risk, in the face of relatively few actual injuries (which are what come to the attention of regulators).

Conclusion

Which brings the discussion full circle. Legislation and regulation are essential foundations to counterbalance the commercial drivers of profitability and cost minimisation. They are not sufficient (as demonstrated by the high injury rates in the meat processing industry) and other approaches are also required. While excellent technology and processes exist in many areas, as Reason points out (to quote again): “…a poor safety culture will encourage an atmosphere of non-compliance to safe operating practices. Violations are likely to be most common in organizations where the unspoken attitudes and beliefs mean that production and commercial goals are seen to outweigh those relating to safety.” (Reason 1998, p. 297).

From the research successful promotion of a positive safety culture clearly seems to be the key to a safer meat processing industry.


Parsons, B. 2000, ‘OHS a measure of the value placed on people’, APESMA Publication.


