

Manual Task Risk Assessment Tool

Mount Isa Mines

The Problem

Workplace injuries sustained while undertaking everyday manual tasks are statistically over-represented in our business. These injuries have a significant impact on the wellbeing of our workers, as well as the productivity and sustainability of our operations. For this reason, raising awareness of the causes and addressing the occurrence of manual task related injury has been identified as a key focus area for injury prevention initiatives across our north Queensland operations.

Strategies used in the past were considered too complex to be effective in the daily task risk assessments conducted by our workforce. Despite significant and ongoing effort, statistics indicate the risk remains, and a more simplistic, accessible solution was required to proactively and creatively address the occurrence of manual task related injury.

The Solution

We developed a simple, interactive Manual Task Risk Assessment (MTRA) tool that can be used to assess the risk of sustaining both acute and cumulative injury while carrying out manual tasks. The tool clearly illustrates the direct risk factors (namely weight (forces/exertions) and speed of movement; body position (posture), and exposure) leading to manual task related injury. It works as a guide to assess the hazards and better understand the risks associated with manual tasks and can be applied to all roles throughout our operations. With consideration for the hierarchy of controls, we recognised that where there is a need for human involvement in a task there is an inherent injury risk, and that our last and most important lines of defence against injury are the behaviour of and decisions made by the person performing that task.

Design

We determined to be most effective the MTRA tool must meet a defined set of objectives. It must:

- Be creative, interactive and attractive to users
- Use simple language and operate with minimal instruction
- Be applicable to all operational areas and roles
- Be available in various formats and sizes
- Be tactile and provide immediate feedback
- Deliver outcomes in line with best practice knowledge regarding the risk factors associated with manual tasks
- Ensure inclusion in existing personal risk identification strategies is achievable without the addition of further documentation or reporting.

A concept design was developed by our Health Risk Management team and manufactured in prototype form. To use the MTRA the operator simply identifies the weight being handled or the speed of movement and postural requirements of a task. By moving the dials on the tool face the mechanical gearing within automatically moves the risk indicator dials to display the acute risk level associated with performing that task (*refer to Appendix A, 1*). By indicating the repetitiveness of the task on the “How often or How long” dial, the tool will show the risk of cumulative injury associated with undertaking that task over a prolonged period of time (*refer to Appendix A, 2*). The operator can then consider control options to decrease the risk of injury associated with this task based on the risk factors identified.

Trial and feedback

The MTRA tool was trialled across our underground mining (*refer to Appendix B*), maintenance, and metallurgical processing, smelting (*refer to Appendix C*) and refining operations by our site occupational therapist in order to determine the efficacy of the tool against expected outcomes and use.

Comment was sought directly from workers in terms of:

- Usability
- Practicality in existing risk assessment procedures
- How it would be most effectively applied in their work area
- Suggested changes or improvements they would make to the tool.

Feedback received was largely positive. The tool's simple and interactive design, and its intended purpose as a method of simply assessing risks and increasing awareness without additional paperwork or administrative requirements was seen as particularly attractive. Discussion around how the tool could contribute to existing risk identification and mitigation strategies was well described by participants. Employees who trialled the tool commented that it would enable detailed

description of specific manual tasks and the associated risks, without having to guess the level of potential risk and the effectiveness of controls.

Introduction into our business

The final design and mechanical development of the assessment tool was undertaken in collaboration between Joel Edson, Occupational Therapist Mount Isa Mines and Michael Farrell of Calculated Engineering. The MTRA has been made available in the following formats:

| Format | Dimensions |
|---------------|--|
| Wall mounted | 1200mm x 1000mm |
| Desk size | 370mm x 230mm |
| Handheld | 200mm x 150mm |
| e-MTRA | N/A (electronic version available via site Intranet) |

Note: Since its introduction in mid 2012, the e-MTRA has been used by more than 1000 unique visitors (refer to Appendix D)

Implementation occurred step-by-step as an adjunct to current processes and was integrated into other relevant training provisions like manual handling, hazard identification and risk assessment. This process included the development of procedures for reporting and use, both formally and informally, in personal and other risk assessment frameworks, development of electronic recording mechanisms, and, integration with existing electronic reporting formats.

The tool is currently in use across our metallurgical concentrating and smelting operations, our underground copper mine, and is progressing with the underground and open cut zinc lead mine mines. As stated each area has internally driven the use of the tool to meet specific area needs.

Benefits

The ability of a worker to effectively identify hazards and assess risk is likely to provide the best protection from accident or injury. Performance of this process varies significantly depending on a variety of factors, one of the most common being the perceived complexity in identifying and documenting the hazards and associated risks. This all too often results in the routine recording of standard statements demonstrating either a lack of ability to identify and/or record the hazards identified and risks assessed. A review of both Personal Risk Assessment (PRA) and Job Safety Environment Analysis (JSEA) documents over a period prior to implementation of the tool demonstrated the routine standard reference to manual task risk with very little if any specific detail regarding the type of injury (acute or chronic), the body part at risk or reasons why the risk existed (for example, due to forces/exertions, postures or exposure). This is not to suggest that the workers are unable to identify the relevant information in cases of obvious manual task risk, for example, handling heavy objects, rather that they have not been provided with a framework to identify risk factors in less obvious circumstances or to record this information.

A review of documents post implementation has identified improvement in the detail provided and also in controls specific to the risks identified where the tool has been used, although we recognise that changing long-established patterns requires a long-term commitment. However, early statistics are proving promising: in 2012 Mount Isa Mines achieved a 41 per cent reduction in our annual Total Recordable Injury Frequency Rate. While it is difficult to attribute this improvement to one health and safety initiative alone, given the MTRA tool is already resulting in increased awareness of manual task risk, we are confident that its implementation has played a significant role in our improved safety performance over the past year.

Another unforeseen benefit of the tool has been in its use as a referral indicator for specialist advice regarding manual task risk. A number of work areas have utilised the tool to identify key manual task risks for referral to the site occupational therapist for further analysis and control. Not only has this lead to increased attention to manual task risk but has also resulted in the identification and implementation of high level engineering controls to mitigate risk.

Along with awareness and engagement, we expect that workplace understanding of specific manual task risk factors, and therefore control options, will naturally develop as use of the assessment increases. The driving intent for the development of this tool is to protect our workers and reduce injury. Given the size of our operations, the roll out of the MTRA tool across our Mount Isa Operations, and its value as a simple and engaging way to increasing awareness of manual task risk, has the potential to improve the wellbeing and safety of work practices for almost 5000 people.

Transferability

The MTRA tool has application potential not only across the resources industry but any industry where manual tasks pose an injury risk and where greater understanding of risk factors, and therefore control options, is desired. The key element here is the focus on individual understanding and awareness of manual task risk and its contributing factors. Much of the

information made available to operational personnel is derived from academic biomechanical and ergonomic material and is presented in a way that is too technical and complicated to be effective. This assessment tool has applied the relevant academic knowledge, in a format guided by the workers who will be using it to ensure clarity, relevance and effectiveness.

Innovation

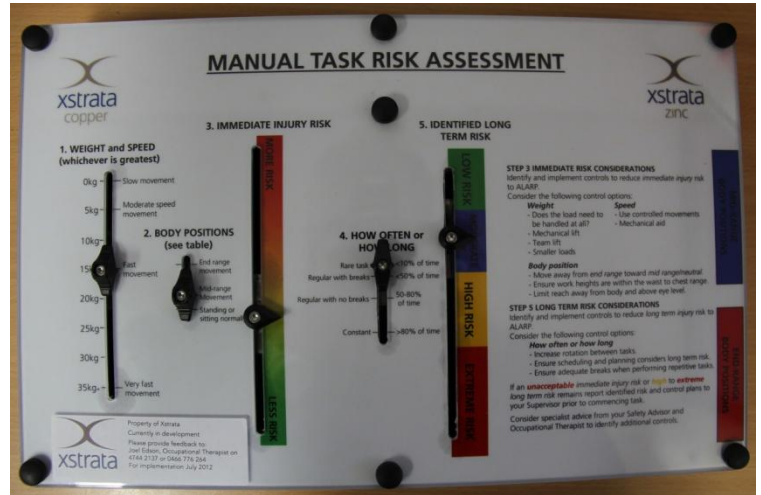
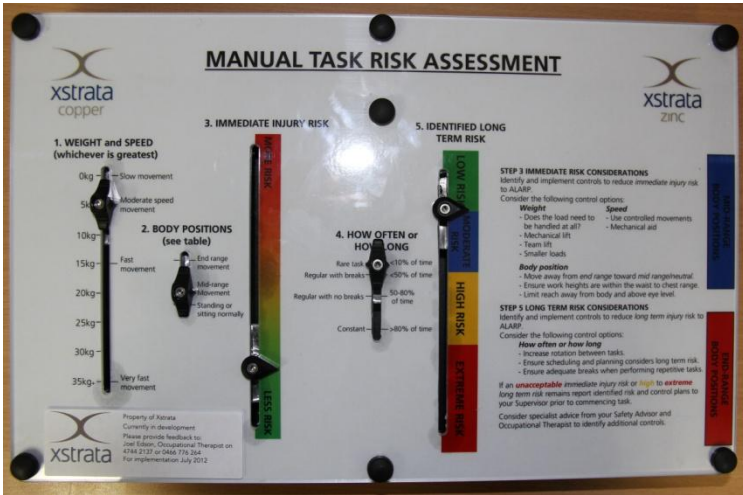
Although the design is based on the existing “tie-line” principle, the application to manual task risk is unique. There have been valid and effective attempts by various companies across a range of industries to mitigate manual task risk however, based on the research conducted, this assessment tool has addressed the issue in a new, creative and innovative way.

Cost

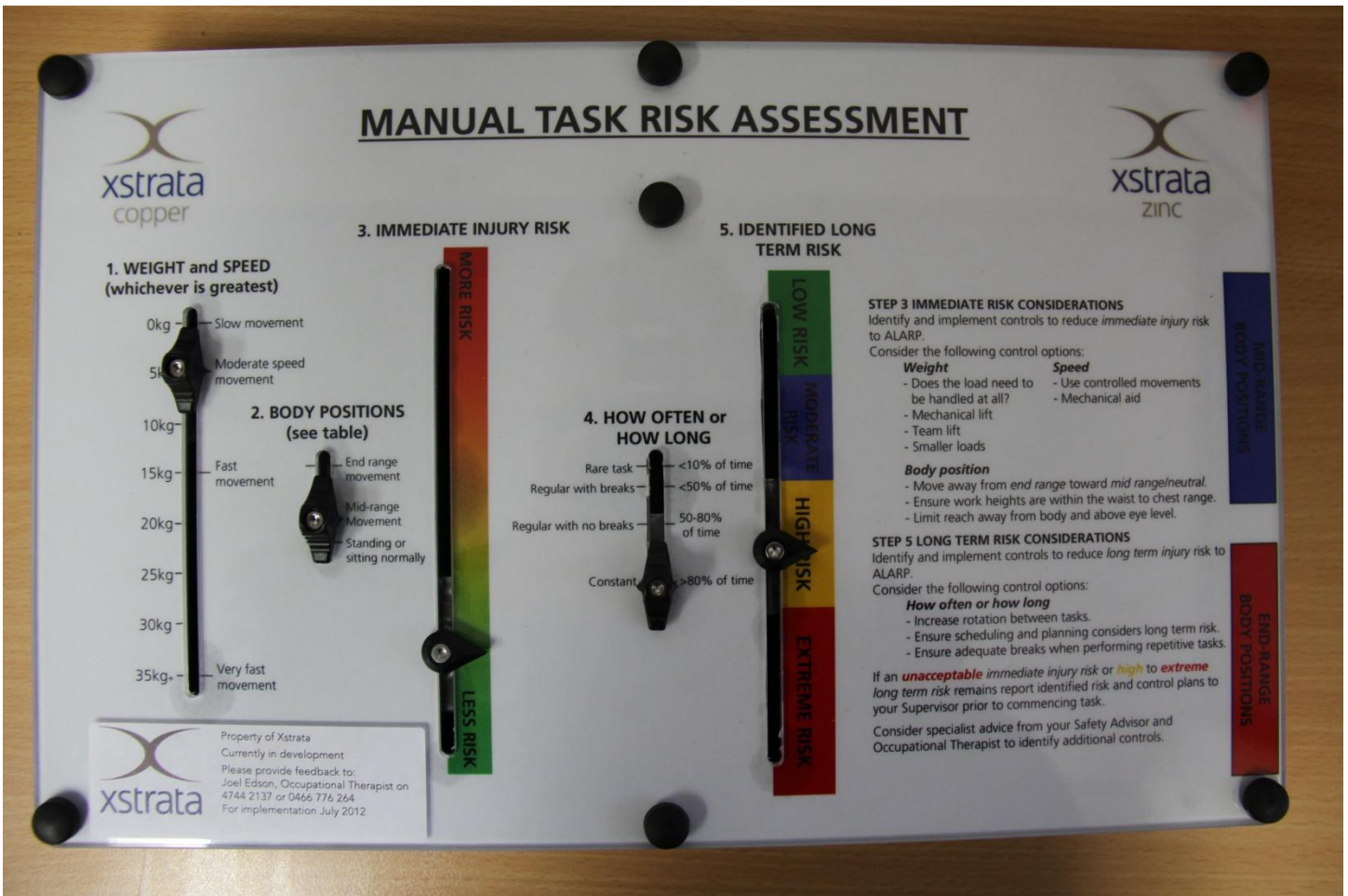
Financial and human resources have been committed to the design, prototype manufacture, trial and implementation of the MTRA tool at Mount Isa Mines. Ongoing human resource requirements to support the implementation and ensure sustainability are likely. Future investment, however, is economical when balance with the improved understanding of manual task risk and safety benefits the MTRA will bring to our workforce. Capital expenditure in the purchase of the tools by the operational areas varies depending on worker numbers and intentions for use with prices ranging from \$250 for the handheld versions to \$2000 for the wall mounted. The electronic version was developed in-house by our IT team, and therefore did not require any additional outlay over and above the business’s normal operating costs.

Appendix A

- The images below illustrate the risks associated with lifting a load (5 kilograms, then 15 kilograms), using mid-range movements. The task is classified as rare, or not undertaken often. **Note the increase in risk levels (both immediate and long term) as the weight of the load increases.**



- The image below illustrates the risks associated with the same task (lifting a 5 kilogram load using mid-range movements), however, this time the task is classified as constant, or undertaken more than 80 percent of the time. **Note the low immediate risk level, but the high long-term risk level.**



Appendix B



Joel Edson, Occupational Therapist Mount Isa Mines (*top right*) overseeing Crushing and Conveying team from our underground copper mine using the MTRA in a pre-start risk assessment



Joel Edson, Occupational Therapist Mount Isa Mines using the MTRA to conduct a Manual Task Risk Assessment with Shayne Dunbar, Anode Production Supervisor Mount Isa Copper Smelter

Appendix D



Jessica Edwards, Graduate Community Relations Advisor Mount Isa Mines, trialling the electronic MTRA, available via the Mount Isa Mines intranet