CSIRO Striving For Zero Harm
in a Diverse Work Environment

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Abstract

CSIRO Australia faces a diverse range of health, safety and environmental (HSE) hazards. To strive for zero harm, CSIRO's HSE Strategic Plan set a requirement to mmaintain and communicate the HSE risk profile, focus effort and capability on highest-impact activities, and proactively identify emerging risk. It was also critical that employees be risk-aware and have the knowledge and skills to work safely. CSIRO implemented management systems and delivered strategic and targeted operational programs to address HSE risk, lower the likelihood of injury, achieve more active involvement in identifying and minimising risk, and demonstrate positive leadership behaviours. CSIRO's performance has improved significantly over more than seven years as a result of improvements in accountability, systems and risk controls.

Introduction

The Commonwealth Scientific and Industrial Research Organization (CSIRO) is Australia's national science agency and one of the largest and most diverse research agencies in the world. It has strategic alliances with government, industry, business and communities in over 80 countries. With over 6,600 employees spread across 54 locations in Australia and two overseas, CSIRO carries out and delivers world leading research across areas such as energy, minerals and materials engineering, food and nutrition, and agribusiness. CSIRO is a matrix organization of 14 science business units, supported by enterprise functions including information technology, human resources, finance, legal and property services (CSIRO 2010).

CSIRO has a diverse range of health, safety and environmental (HSE) hazards. Whilst the strategies for reducing risk exposures is practised generally, the potential for serious injury or even a fatality still remains in some hazard categories. After a fatality in December 2001 (CSIRO 2006) and a review of safety culture and service delivery, CSIRO implemented enhanced management systems and delivered strategic and targeted operational programs to address HSE risk, lower the likelihood of injury, achieve more active involvement in identifying and minimizing risk, and improve business HSE performance. An important aim of CSIRO's health and safety policy was to prevent injury to employees through hazard identification and risk assessment.

The period 2002 to 2007 marked significant change in HSE across CSIRO. During this time frame, the HSE network sought to initiate a bottom-up shift from a culture of compliance to one of greater active involvement in identifying and minimizing risks. Good progress was made, in particular, in strengthening the HSE network and lifting performance. CSIRO's HSE Strategic Plan 2004–2007 was successful in delivering a safer, cleaner and healthier working environment for our staff. The strategy resulted in an increased awareness of HSE across the enterprise, the establishment of a robust HSE management system and procedures, reduced risk, and a significant measurable improvement in safety performance.

Moving forward, CSIRO's HSE Strategic Plan for 2007-2011 focused on challenges and objectives that required a step-change improvement in safety culture and performance. As a commitment to achieve this, CSIRO embraced a more aspirational vision: Striving for Zero Harm – zero injuries, zero illnesses, zero environmental harm, and zero tolerances of unsafe behaviour (CSIRO 2008). Part of CSIRO's goal was to enhance and communicate the HSE risk profile, address high potential impact activities, proactively identify emerging risk, and improve leadership behaviours. It was also critical that employees had the knowledge and skills to work safely.

This paper will present an overview of how CSIRO strives for zero harm, and:

- Describe the organizational profile
- Outline the HSE strategic management arrangements
- Identify the processes used to identify organizational high risk and strategies for mitigating risk
- Describe programs and tools used to engage employees in safety critical knowledge and skills, and
- List performance results.

Organizational Profile

Workforce
CSIRO's workforce is highly educated and motivated, and comprises primarily scientists, engineers and technicians (74%) and administrative and other staff (26%). Females comprise 39% of staff (CSIRO 2010).

Legal Framework
CSIRO follows Commonwealth legislation and relevant Australian Standards such as *AS/NZS 2243 Safety in Laboratories*. CSIRO has a health and safety management system based upon *AS/NZS 4804 Occupational health and safety management systems – General guidelines on principles, systems and supporting techniques* and an environmental management system based on ISO 14001. The Standard's principal objectives are to minimise and continually reduce the incidence of occupational injuries and illnesses, and integrate safe work practices into all areas of the organisation. CSIRO interacts with a number of regulatory authorities such as Comcare (general health and safety, workers compensation, notifiable incidents, plant registration, dangerous goods notification); ARPANSA (ionising apparatus and materials, and non-ionising apparatus); AQIS (animal and plant quarantine); OGTR (gene technology); TGA (therapeutic goods); NICNAS (importation of chemicals), and EPA (environmental issues).

HSE Strategic Management Arrangements

HSE Strategy

An HSE Strategy sets the framework for planning goals to improve business imperatives. CSIRO's HSE Strategic Plan for 2007-2011 was produced with input from a wide range of stakeholders to ensure that it was relevant to staff working at all levels and in all functions of CSIRO. The HSE strategy focused on five key elements (Vecchio-Sadus 2010):

1. Leadership commitment and competency – executive and leadership education, site observations, performance agreements, link to remuneration
2. Clear expectations and accountabilities of all staff – role clarity and accountability, expected behaviours, education and training, recognition mechanisms
3. Effective HSE Management system and tools – integrated business planning approach, optimises communication, consolidate and streamline delivery of HSE services and the procedures that underpin them, focus on work-life balance
4. Risk-based prioritization – risk profile, emerging risks
5. Measurement, review, audit and closure – performance measures, audits, closure process and feedback loops.

The CSIRO HSE Strategic Plan was designed to promote the active involvement and participation of leaders and staff in HSE improvements across the enterprise and, in particular, building on continually improving the safety culture. In essence, CSIRO's leaders would embrace leadership of and the accountability for HSE, staff would be supported to fully carry out their responsibilities, and CSIRO would focus its efforts more effectively on the range of risks faced. To achieve these results would require significant organizational, behavioural and operational change in HSE.

An initiative of the HSE Strategy was to ensure that all employees were clear about their roles, responsibilities and accountabilities with regard to HSE. Another initiative was to ensure HSE education and training was of a high and consistent quality, and delivers the required skills, knowledge and behavioural change. Risk-based prioritization required an understanding of CSIRO's changing risk profile and to focus effort and capability on highest impact activities. To reduce specific high risks with improve awareness, CSIRO needed to be more prepared and equipped with specific strategies and procedures for a number of high risks, e.g., operation of mechanical plant and equipment.

The upcoming CSIRO HSE Strategic Plan 2011-15 hopes to continue its focus on striving for zero harm and has been built around five success pillars:

1. Strengthening HSE Culture – cultivate an environment that encourages the behaviors and beliefs that will deliver lasting improvements in HSE performance
2. Health and Wellbeing – identify and control exposures to occupational health risks and provide opportunities to improve staff personal health and wellbeing
3. Fatality Prevention – develop an organizational mindset where fatality risks and controls are understood by leaders and staff, and multiple layers of control are identified, implemented and regularly reviewed to ensure they do not fail
4. Environmental Stewardship – move CSIRO to a more sustainable footing through targeted initiatives and revitalize focus on environmental risk management processes to support improved environmental stewardship
5. HSE Information, Monitoring and Review – provide CSIRO leaders and staff with ready access to reliable, integrated and accurate HSE information that enables timely and informed decisions and interventions to be made at all levels of the organization.

Key Operational Components

A strategy doesn't stand alone – it requires programs to keep it visible and viable (Vecchio-Sadus 2010). CSIRO's HSE Strategic Plan is linked to three main operational components:

(i) An HSE management system supported by a HSE Policy, HSE Management Standard and HSE procedures, guidelines and tools
(ii) Three supporting HSE strategies with associated implementation programs, and
(iii) An Australia-wide CSIRO HSE network.

HSE Policy, Management Standard and Management System

CSIRO has articulated its requirements for HSE through its HSE Policy, and establishing, implementing and reviewing the effectiveness of HSE procedures. Tools that can introduce and maintain an effective safety culture include understanding values, attitudes and compliance, and reviewing current policies, procedures and systems.

In 2010, the CSIRO HSE Management Standard was introduced to describe the mandatory performance requirements for HSE applicable to all CSIRO sites and facilities. It also provided the basis for a compliance audit process.

The HSE Management System (HSEMS) describes the operating HSE framework, structure, roles and responsibilities, accountability, governance, performance and review. To support the implementation of the HSEMS and the HSE strategies, there are numerous procedures, guidelines and tools across a wide range of HSE topics that are aligned with the enterprise risk profile.

Supporting HSE Strategies

CSIRO has three supporting HSE strategies each with a specific enterprise implementation program (CSIRO 2008, 2010; Vecchio-Sadus 2010). The outcomes and benefits of this approach have included reduction of risk, improved staff participation, and improved performance.

Musculoskeletal Management Strategy – The strategy set a priority to reduce high impact/high frequency incidents by better managing musculoskeletal risk due to incorrect set-up of workstations, incorrect manual handling methods and incorrect equipment for the task. Elements of the Musculoskeletal Management Strategy include analysis of incident trends and compensation, review of operating risk profile, training, information and communication. The associated *Ergonomics@Work* program provided a higher level of management of musculoskeletal activities to prevent injuries and to improve performance.

Health and Wellbeing Strategy – CSIRO aimed to enhance the outlook for an evolving and challenging workforce by offering strategies for dealing with a variety of health and wellbeing issues. To support the Health and Wellbeing Strategy, CSIRO has provided programs to inspire, motivate and educate employees to make healthier and better informed choices to positively impact upon their personal health, work productivity and overall quality of life. These have included an enterprise employee assistance program (staff counselling service), mental health seminars and support of national events such as the Global Corporate Challenge.

Environmental Sustainability Strategy – CSIRO integrated environmental sustainability considerations into decision-making and research being conducted. The Strategy focussed on the core themes of carbon/energy, water and waste. It is being implemented between 2008-2015 to achieve the high-level targets of being carbon neutral, halving mains water consumption and

halving waste generation. The associated *Sustainability@Work* program supports local initiatives to reduce the environmental footprint of the organization.

CSIRO HSE Network

CSIRO has an Australia-wide HSE network to engage with leaders, researchers and support staff to ensure standards are maintained and to guide the organisation to reduce risk exposures. The network's role is pivotal in the development and implementation of policy, providing leadership, direction and advice, identifying solutions to high risk, encouraging staff involvement and responsibility of work areas, and building a strong safety culture. The Network enables a high level of collaboration and consultation to facilitate improved sharing of knowledge and practices as well as effective implementation of enterprise HSE initiatives. It provides a conduit for communication and information exchange with the Business Units. In 2010, CSIRO consolidated and streamlined HSE services to deliver seamless, effective and efficient HSE support across the entire organization.

The CSIRO HSE Network currently has over 500 members in positions such as General Manager HSE, H&S Operations Manager, Environmental Sustainability Manager, Business Unit HSE Leader, HSE Officer, Specialist Safety Officer (e.g., chemical, biological, diving, radiation etc.) and corporate citizens (e.g., Health & Safety Representatives, first-aiders, fire wardens).

Identifying and Managing Enterprise Risk

Workplaces

CSIRO's workplaces include chemical and engineering facilities, laboratories (wet, dry, physical containment), process bays, pilot plants, animal stations, glasshouses, field stations and offices. CSIRO manages:

- 3 National Research Facilities: Australian Animal Health Laboratory (AAHL); Australia Telescope National Facility (ATNF); and Marine Research Vessel *Southern Surveyor*
- 5 National Biological Collections, and
- 11 National Reference Collections.

Key Hazards

By nature of its business, CSIRO faces some of the most diverse range of HSE hazards compared with other Australian government departments and agencies (Vecchio-Sadus 2008). Major hazards in CSIRO include:

- Physical – impact or crush, hot or cold substances, gravitation, lighting, temperature, electricity, fire, noise, vibration, pressure, manual handling
- Chemical – dangerous goods, hazardous substances, gases, carcinogens - CSIRO does not use explosives but may handle or generate materials that have an explosive capability
- Biological – virus, bacteria, fungi, parasites, ticks, mites
- Radiation – ionising (sealed and unsealed sources, X-rays), non-ionising (welding, UV transilluminators, microwaves, lasers, radiofrequency), and
- Psychological – stress, overwork/overload, boring or mundane tasks.

CSIRO staff may work in a variety of hazardous environments including mine sites, oil rigs, farms, forests, mountains, deserts and bodies of water. Often, the work is made more hazardous and the probability of serious personal injury is higher due to remote locations, arduous terrain, limited/poor communications, heights, bushfires, and extreme weather conditions whilst being

exposed to numerous risks from farm and harvesting equipment, chainsaws, firearms, elevated work platforms, pressure vessels, sharp tools, large and small animals, biting and stinging animals, chemicals (herbicides, insecticides) and radiation (X-rays, UV, lasers).

Scientific diving is an integral part of a number of projects. Any failure in managing the safety of these operations can have potentially catastrophic consequences for the employee, the research and CSIRO. Diving activities involve a number of potential hazards that can result in serious personal injury or fatality. The Dive Advisory Committee involves expertise from the Australian Institute of Marine Science, University of Tasmania and a hyperbaric doctor. CSIRO has a diving procedures manual that covers the requirements of the Australian Standard on scientific diving. A significant amount of equipment is required for diving operations including self-contained underwater breathing apparatus (SCUBA) and surface supplied breathing apparatus.

HSE Risk Profile

CSIRO periodically reviews its enterprise HSE risk profile to establish the major categories of risk currently facing it. The risk review also aims to identify areas where existing controls or management systems are not adequate or more efficient and effective HSE management practices could be implemented, and focus control and monitoring activity by identifying inherently high risk areas where existing controls or management systems are mitigating the risk to an acceptable level. The risk review is conducted by CSIRO's Risk Assessment & Audit unit in consultation with business unit HSE Leaders and the Corporate HSE office. Updated risk profiles are provided to the Board, Chief Executive and CSIRO Executive Team to enable a top-level understanding of the current HSE risks facing the business.

Potential health and safety (H&S) risk was ranked using the enterprise-wide risk assessment methodology. H&S risk exposures were mapped against 59 hazard categories. When high risk activities were assessed, possible effects could include staff injury, chronic illness, fatality, damage to property and assets, internal and external investigations, project delays, adverse media exposure, and increased compensation and premium costs. Each business unit was tasked with reviewing their workplace HSE risk plans and calculating the inherent risk which is the level of risk in the absence of control systems designed to reduce the likelihood and/or consequences of the H&S hazard. This was followed with a calculation of the residual (assessed) risk which is the level of risk after taking into consideration the effectiveness of existing control systems for managing these risks. Any 'significant' assessed risks represented key opportunities for management to implement further risk reduction strategies.

The diverse nature of CSIRO's activities contributed to high levels of inherent risk exposure across a broad range of possible hazard categories. An evaluation of existing control treatments implemented to prevent and manage H&S risks indicated that, from an enterprise perspective, no high residual risks remained. Forty five (76%) of the potential H&S hazards were being effectively managed by current management systems and equipment controls. However, 14 (24%) of the potential H&S hazards continued to pose a significant (residual) risk to the health and safety of staff in the CSIRO workplace. These were: vehicles and transport; plant, machinery, equipment in motion; pressure equipment (high/vacuum); flammable substances; cryogenic fluids; working at heights; working at sea or in water bodies; corrosive/oxidising agents; toxic/harmful substances; generation of dusts, vapours, fumes etc.; flammable gases; mental stress; overseas travel/work; and engulfment (in sand). There has been a reduction of high residual risks across over several years indicative of the work undertaken and resources provided

to implement improved HSE management systems, equipment and risk reduction measures. This also included the high level of awareness and application of the HSE risk management process and the verification audits conducted internally and by external authorities.

Engaging Employees in Safety Critical Knowledge and Skills

CSIRO keeps its employees informed of HSE in several ways. Key documents include:

- HSE Policy, HSE Management Standard and HSE Procedures and Guidelines (e.g., hazardous substances, gas safety, fieldwork, plant)
- Serious HSE incident alerts (e.g., electric shock, chemical exposure), and
- HSE Committee minutes and records.

Other tools used to improve employee knowledge and skills include the following:

HSE induction – HSE information is provided during inductions to cover site rules and requirements, emergency procedures and incident reporting. The aim is to enable new employees, visitors and contractors to carry out their duties in a safe manner from the moment they come on site.

General awareness – CSIRO campaigns extensively on the importance of general HSE issues and injury and near-miss reporting through emails to employees, articles in the staff newsletters, presentations to senior management, seminars and poster displays. We have produced several in-house brochures and posters on topics such as electrical safety, health and wellbeing, ergonomics, and preventing occupational overuse in laboratories.

HSE risk management plan – All work in CSIRO is covered by a HSE risk management plan which aims to comply with legislation, prevent incidents, injuries and ill health, have better informed staff and encourage 'ownership' of safety, provide written evidence of safe operation of materials and equipment, and add value to the science. All work must identify the workplace hazards that pose a risk to people and the environment, assess the magnitude of those risks, and apply controls to mitigate risk.

Every employee must be covered by a HSE risk management plan for their research project or work area. The plan is completed as a project team. Employee and management involvement in risk assessment demonstrates that HSE is owned by all individuals within the organization. Publicizing risk assessments demonstrates employee involvement in HSE and encourages other work groups to implement improvements in their work area.

Manuals, checklists and operating procedures – The safety manual consolidates the rules and requirements for working safely. Inspection checklists and standard operating procedures help prevent incidents and miscommunications, increase hazard reporting, better operate equipment, and make informed decisions about operation. Maintenance logbooks provide a historical profile of plant and machinery. Operating procedures (safe work instructions) provide advice on acceptable/safe work practices. The lock-out or tag-out of faulty equipment or work in progress communicates potential danger.

Other tools to assist in the hazard identification and risk assessment process include HAZOP (used extensively for engineering and complex experiments and pilot plants), plant risk assessment (e.g., plant under pressure, plant with moving parts, powered mobile plant, plant with hot or cold parts, electrical plant and plant exposed to electrical hazards, plant designed to lift or move, industrial robots and other remotely or automatically energised equipment, scaffolds), and

job safety analysis (systematic review of unfamiliar jobs using the hazard identification and risk control process).

Incident and hazard management – Employees are encouraged to report incidents, near-misses and hazards as a means to preventing a recurrence or further injury to personnel or damage to property and the environment. Communicating the results of a hazard or incident investigation demonstrates management commitment in identifying and addressing underlying causes to prevent a recurrence. The involvement of employees in suggesting strategies to prevent a recurrence encourages ownership of the solution(s) and a desire to implement the recommendations. It is important to have on-going campaigns to encourage the reporting of incident and injuries as many employees will not report for fear of recrimination.

Emergency management – No organisation is immune from issues or crisis. In managing these, there is no substitute for preparedness. Each site has an emergency response plan that describes how to: manage hazards that face the organisation; establish, implement and practice emergency plans; and restore services after an emergency situation. Emergency situations may be identified and prioritised by assessing the HSE risk profile. Communication is essential to the safety, protection and welfare of employees. Protocols have been established for dealing with the public and media.

Audits and inspections – A range of risk audits are conducted internally and by external organisations. CSIRO has its own internal, independent audit department that reports to the audit committee that is answerable to the Board of CSIRO. They audit across a variety of business processes including HSE. Internal audits have been conducted of the HSE Management System and hazardous substances. Audit recommendations are required to be implemented. External audits have been conducted in the areas of asbestos, gas safety, ionising and non-ionising radiation, manual handling, plant and equipment.

Management and HSE personnel carry out workplace inspections to monitor practices and identify areas for improvement. In addition, line managers, supervisors and project teams carry out housekeeping inspections of laboratories, workshops and process bays intended to give them ownership for the upkeep of their work area so it remains in a clean, safe and orderly condition. Together, these programs aim to build a safety culture and achieve work practices that decrease the risk of incidents and injuries, improve efficiency and production, and reduce waste.

A vendor assurance program was undertaken with a major laboratory gas supplier to address identified gas hazards and handling issues.

Training – Training is conducted to respond to gaps in knowledge, to target high-risk groups or areas, and to adjust perception of risk. Key training programs across CSIRO include gas safety, first-aid, handling hazardous substances, plant competency, and manual handling. Others courses have included 4WD (ATV) training, diving safety, confined spaces, forklift safety, slinging loads and chainsaw safety.

HSE website – With a vast amount of information available, it is essential that the critical information on HSE is readily accessed and understood. As scientists have a preference towards the use of e-technology and the Internet, we use these media to communicate HSE. All CSIRO employees either have a computer at their desk or access to one. We have our own HSE Intranet that provides a 'one-stop shop' to employees and includes policy forms (e.g., incident report, HSE risk assessment), policy information, and general awareness topics. The resources are always available to keep the workforce informed so they are better able to respond to changing

risk and to prevent incidents and injuries. E-technology is also used for refresher training and inductions.

HSE annual report – CSIRO produces an annual report that illustrates the range of activities and initiatives undertaken along with a review of performance standards achieved (CSIRO 2008, 2009, 2010).

HSE performance indicators – CSIRO communicates its performance through graphs of lost time, medical treatments, workers compensation rates, severity and incident rates, and positive performance (lead) indicators. These are used to facilitate continual improvement and enhance the accountability of line management. They are discussed at management and HSE committee meetings.

Motivating Employees to Behave Safely

The way we communicate about HSE will influence whether or not people will understand and participate in the HSE process, and the language we use will often determine whether the process is accepted or rejected (Vecchio-Sadus & Griffiths 2004; Vecchio-Sadus 2006). CSIRO's employees believe the workplace is safe (measured through a confidential poll); however, the organization needs to maintain an atmosphere that promotes responsible behaviour, and reminds and reinforces the benefits for employees and the organization. Merely training employees to work safely will often not be sufficient, and it may be necessary to provide forms of motivation and publicity to encourage employee to take responsibility for their own health, safety and wellbeing.

Executive HSE Leadership Course – A one-day HSE Leadership Training course was developed for CSIRO Executives and designed to provide the knowledge and skills that enable CSIRO's leaders to model positive safety leadership behaviours. The HSE leadership training aimed to instil a confidence in our leaders to take action on HSE and not to walk past a sub-standard condition or practice.

Top 250 HSE Leadership Course – HSE leadership training has been conducted since 2009 for the next Top 250 level of senior leaders. This is a 2-day course with a practical exercise on conducting HSE Reviews. This training is a cascading program from the HSE Executive Leadership training, sending the same messages and assisting in understanding the value-add for managers at senior levels.

Supervisor HSE training – All CSIRO people leaders supervisors must attend compulsory training to enable them to fulfil their roles and responsibilities in relation to HSE. The course covers legislation and HSE procedures, risk assessment, incident reporting, rehabilitation and safety culture. The course is being updated in 2011 to include elements on leadership behaviours.

Safety contacts – The safety contacts program commenced in December 2008 as an initiative to increase the visibility of senior management executives regarding their value for safety and CSIRO's 'zero harm' vision. Each member of Executive committed to carrying out at least two safety contacts per month. Over a year, this resulted in more than 1,000 staff having had a one-on-one conversation with a senior leader regarding CSIRO's safety values and expectations. Feedback on the benefits arising from these contacts from both the senior leaders and the staff involved has been very positive.

HSE review program – A HSE Review Program was introduced as a practical engagement tool for the Top 250 leaders. The HSE Review Program comprises specific review topics, such as Contractor Management and Emergency Management, which will enable leaders to conduct

reviews of HSE management and control strategies in a consistent manner, irrespective of Business Unit or research work. The program was a new positive performance indicator introduced in July 2009.

HSE Week – An HSE week aims to promote a happier and healthier workplace by raising the level of awareness amongst employees, and demonstrating commitment from management. Both fun and informative activities are conducted that include seminars, health eating and environmental understanding.

Wellbeing promotion – CSIRO sponsors and supports staff to participate in the Global Corporate Challenge (GCC). On average, 10% of staff participate in the 125-day challenge with a daily target of 10,000 steps. Participants and their teams have an opportunity to maintain a long-term commitment and motivation needed to bring about positive habitual change in their fitness.

HSE conference – CSIRO holds an annual HSE conference to provide an opportunity to share broad information on HSE and case studies internally and externally, and a forum for meeting with other HSE professionals and managers.

Reward and recognition – CSIRO recognises and rewards individual and group achievement through the annual CSIRO Medals. There are awards for health and safety, and environmental achievement. The winners are presented with a certificate and cash prize at a formal ceremony.

Performance Measurement

CSIRO's health and safety performance has improved significantly over more than seven years as a result of improvements in accountability, systems, risk controls and employee knowledge and skills (CSIRO 2008; Macdonald 2011). Table 1 presents a snapshot of performance data calculated in accordance with Australian Standards (SA 1990).

Table 1. Health and safety performance data from 2003 to 2010.

Year to Date	No. Incidents	No. Claims	LTI	Claims cost to Date (AUS$)	Time Lost (weeks)	ATLR (weeks)	MTFR	LTIFR
Dec 2010	794	48	33	202,020	73.4	2.2	4.1	2.8
Dec 2009	902	56	5	106,704	20.4	4.1	5.1	0.5
Dec 2008	619	53	12	94,927	32	2.7	5	1.1
Dec 2007	652	158	20	236,713	58	2.9	13	1.7
Dec 2006	652	164	27	257,064	80	3.0	14	2.3
Dec 2005	760	182	38	378,898	166	4.4	14	2.9
Dec 2004	831	225	57	405,418	186	3.3	20	5.2
Dec 2003	926	219	54	526,955	143	2.6	18	4.5

Legend:

Number of Incidents - The total number of incidents recorded (includes injuries, illnesses, near-misses and environmental incidents).

Number of Claims - The total number of claims lodged with the workers compensation authority.

Loss Time Incidents (LTI) - The number of injuries resulting in time lost from work equal to or greater than 1 full day/or shift.

Claims cost to Date - The total amount of money (medical, incapacity and rehabilitative costs) paid by the workers compensation authority from the date of injury to the reporting date. This amount will continue to rise for ongoing claims.

Time Lost to Date - The total amount of time lost (weeks) from the date of injury till the date of reporting. This figure will continue to accumulate for on-going claims.

Average Time Lost Rate (ATLR) - The average time lost per lost time incident.

Medically Treated Frequency Rate (MTFR) - The number of workers compensation claims per 1 million hours worked.

Loss Time Frequency Rate (LTIFR) - The number of lost time incidents (LTI) per 1 million hours worked.

Musculoskeletal injuries including body stressing and repetitive movement type injuries remain CSIRO's most significant incident type, accounting for the highest number of claims and time off work. In 2005, the CSIRO Musculoskeletal Management Strategy and its supporting *Ergonomics@Work* program were launched to drive a change across the enterprise and reduce levels of this injury. This initiative has made a positive impact as evidenced by the significant decrease in claims for injuries associated with body stressing.

The Health and Wellbeing Strategy continues to provide a variety of programs to assist CSIRO staff in understanding the importance of health and wellbeing, and enables them to take part in supported activities at all levels of the organization. The various supporting programs have helped empower employees to make positive healthy and lifestyle choices. Improvements have also achieved, in particular, in reducing the number of psychological injury claims.

Prevention and promotion efforts have made an impact on the Workers Compensation Premium. The premium rate, determined on the previous four-year injury and claims history and return-to-work performance, is one of the lowest amongst all Australian government agencies at 0.34% payroll (AUS$1.49 million). This compares favourably with the average government rate of 1.20% of payroll (CSIRO 2010).

CSIRO also measures performance across a series of lead indicators (Vecchio-Sadus 2010). In 2002, lead indicators were introduced to measure the percentage of new staff inducted on the first day of employment, percentage of supervisors with HSE training, percentage of incidents recorded and fully investigated, percentage of staff covered by a HSE risk assessment and percentage of rehabilitation assessments initiated within 10 working days from the date of notification of injury/illness, where the injury/illness has resulted in greater than three days off work. These indicators have now reached their usefulness as compliance is close to or at 100%. In the last two years, additional lead indicators were introduced to measure safety contacts and HSE review programs, both of which are tracking well against compliance requirements.

Conclusion

It is widely acknowledged that a lot of CSIRO's work is risky; however, good risk management principles embedded in business processes assist to lower the likelihood of injury. Communication and training are fundamental to ensure staff remain risk-aware and work safely. To continue to strive for zero harm, CSIRO will deliver new strategic and targeted operational programs to address HSE risk. New challenges will include risk associated with nanotechnology projects and implementing new national health and safety laws. There will also be a continued approach to identifying new and improved systems and tools.

There still remains a major challenge of achieving an organization-wide culture of leadership and proactive ownership around HSE issues, from the senior leaders of the organization to staff at the work bench, and the ongoing need to keep pace with and respond to internal and external changes impacting the business. CSIRO will continue to focus on programs to improve general employee behaviours and to develop people leaders.

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