A series of innovative research projects analysing mining industry incident data will enhance our understanding of the causes and associated mitigating controls.

Department of Mines and Petroleum (DMP) Investigation Services General Manager Dr Colin Boothroyd said the department was keen to find out what extra knowledge and lessons could be gleaned from this data.

“Edith Cowan University (ECU) has proposed three projects,” Dr Boothroyd said.

“One intends to analyse the data to identify types and frequencies of injuries and use this to shape the education curricula for emergency response in aeromedical retrieval and, from 2017, occupational paramedicine.”

This project, led by ECU Professor Russell Jones, will analyse the incident data to assist the development of training for mine site paramedics and Royal Flying Doctor Service personnel.

Professor Jones leads the Emergency Services Research Group and said he was delighted to have access to this data.

“It represents the actual needs of industry for the training of paramedics and emergency personnel,” he said.

“We will see the benefit of this research in our new and updated courses straight away”.

ECU researchers also intend to develop statistical models from the safety data that will assist industry to forecast the risk of injuries.

Dr Marcus Cattani is developing and testing a series of analytical processes which aim to make use of the historical data to model the current and potentially the future likelihood of incidents.

“I think our research project offers some new ways of interpreting the data, which we are optimistic will benefit health and safety performance in this industry,” Dr Cattani said.

Analysis of incident data to assist industry identify preventative strategies is the subject of the research project being conducted by the third ECU researcher, Dr Martyn Cross.

Dr Boothroyd said the department had provided ECU and the University of Western Australia (UWA) with the same data set that was analysed in the serious injury report published by DMP in 2015. All company and personal identifiers have been removed to make the data anonymous.
Based on this initial data set UWA are proposing to obtain insights into hazards, injuries and contributing factors by analysing the text in the narrative descriptions.

The project at UWA is led by Professor Mark Griffin and Dr Wei Liu and will apply recent advances in the analysis of large text databases to provide new insights about safety from written accident reports.

The analysis will also provide guidelines about the kind of information that is most useful to include in reports.

“Extremely rich information is contained within the descriptive reports of accidents and incidents,” Professor Griffin said.

“However, different ways of describing similar events, and the complexity of natural language, have made it difficult to extract useful information from these reports.

“Recent advances in language processing are now unlocking this potential and will be useful for all those interested in improving safety.

“While the proposals are still being finalised, the final research and findings will be presented to industry as part of the continual improvement of safety in the industry.”

Dr Boothroyd said the department was also developing a Hazard Register.

“This will summarise information from the 64 fatalities that have occurred since 2000 and identify hazardous tasks and the 12 occupational groups most at risk,” he said.

“This information will also be communicated to industry.”

Mines and Petroleum Minister Sean L’Estrange has welcomed the collaborative projects.

“I am particularly interested in data analysis which could identify trends in causes of mine deaths and near misses, so we can further improve our mines safety inspection regimes,” Mr L’Estrange said.

Serious Injury Analysis report

In August 2015, the Department of Mines and Petroleum released an analysis of more than six hundred serious mining injuries to improve our understanding of injury risks and causes in Western Australia’s mining industry.

The department analysed 658 serious injuries, including three fatalities, reported by the mining industry during a six month period from 1 July to 31 December 2013.

The analysis follows on from the department’s review of 52 fatal accidents in the mining industry between 2000 and 2012.

The key objective of both these reports was to develop a better understanding of the injury risk profile of the State’s mining industry.

The serious injury review and the fatal accident review both have independently identified the three main hazards for all employees.

They are falling while working at height, being in the line of fire for objects or suspended loads, and being struck or crushed by machines and heavy components.

Selected serious injury data was shown to be statistically consistent over a period of ten years, and will be used to establish baseline standards for monitoring the effectiveness of fatality prevention strategies.

Both reports are available to download on the department’s website at www.dmp.wa.gov.au.