

Identifying Critical Issues Involved in Serious Accidents – to Achieve Zero Harm

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What is it?

- A database which contains records of many fatal incidents from Australia and around the world.
- Has been designed with the user in mind to be easily accessible.
- Contains 2814 Incidents with 13832 fatalities.

General Use

- For use as a major tool in mining activities for both operators and regulators from a worldwide perspective.
- Easy to operate database to be integrated into safety systems, for preventing commonly occurring mistakes from repeating.

Specific Uses for the Database

- Risk assessments
- Legislation development
- Standard and guideline development
- Hazard perception training
- Enforcement actions
- Fatal incident trends
- Equipment design

International Information Contained

Country	No. of Fatal Incidents	Period Covered
United States	978	1995 – 2007 (All)
New Zealand	212	1955 – 2007 (All)
United Kingdom	161	Varied
Other	127	Varied

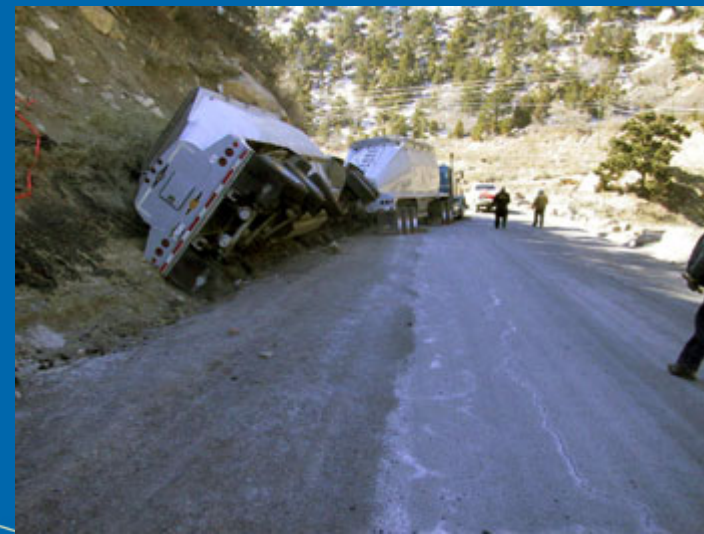
Australian Information Contained

State	No of Fatal Incidents	Period Covered
NSW, QLD and NZ	1270	1955 – 2007 (All)
WA and TAS	211	1980 – 2007 (All)
VIC, SA and NT	64	1998-2007 (All)

Database Information Categories

ID No.	Date	Mine Type	Operation Type	Country	States	Mine Name
Agent of Fatality	Equipment Involvement	Equipment Fit For Purpose Aspects	Activities at Time of Accident	Accident Location	Management and Human Behaviour	No. Killed
Occupation of Deceased	Summary Of Events	Recommendations	'COMET' Event ID			

A Worked Example - Fatal Truck Incidents



Results of Truck Incidents

Nationality	O/C	U/G	UN	Total
United States	132	20	2	154
Australia	52	18	3	73
New Zealand	17	3	0	20
United Kingdom	8	0	0	8
Canada	1	1	1	3
TOTAL	210	42	6	258

Australian Incidents

STATES	O/C	U/G	UN
Queensland	20	6	0
Western Australia	14	5	2
New South Wales	13	5	0
Tasmania	3	1	0
South Australia	2	0	0
Victoria	0	1	1
TOTALS	52	18	3

Mine and Type Incidents

Mine Type	Incidents
Non-Coal	177
Coal	77
Unknown	4
Operation Type	
Open-Cut	210
Underground	42
Unknown	6

AGENT OF FATALITY	O/C	U/G	UNKNOWN
Unintended Operation of Equipment	104	17	4
Other	46	16	2
Contact with Moving or Rotating Plant	19	3	0
Drowning	12	0	0
Fall from Heights	11	0	0
Tyre Explosion	6	0	0
Uncontrolled Release of Energy	5	1	0
Fall of Roof/Sides/Highwall	2	2	0
Electrocution	2	1	0
Asphyxiation	1	1	0
Explosives	0	1	0
Fire	1	0	0
Pressure Vessel Explosion	1	0	0
Sub TOTALS	210	42	6
GRAND TOTAL			258

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Activity at Time of Incident

ACTIVITY	INCIDENTS
Transport	144
Loading/Unloading	39
Maintenance	32
Other	19
Unknown	12
Support Services	9
Production	3
TOTAL	258

From a Manual Sorting

Issues			
Crushed	85	Light Vehicles	12
Edge	75	Dump-Out	11
Loss of Control Operating	51	Tyre/Rims	10
Pedestrian	40	Load-Out	8
Collision	38	Explosion	6
Brakes	34	Access	5
Seatbelts	33	Slippery	5
Isolation	31	Unloaded	4
Maintenance	31	Load-In	3
Dump-In	23	Unloading/Loading	3
Roll Over/ROPS/FOPS	18		
		TOTAL	526

Conclusions



- Highest number of incidents at Open-Cut mine
- Highest number of incidents at Non-Coal mines
- Main agent of fatality is from Unintended Operation of Equipment
- Second highest agent of fatality is Contact with Moving or Rotating Plant
- Main activity being performed when incidents occur is during Transport.
- Another dangerous activity is the Loading and Unloading of the Truck

Recommendations



- Implement improved mine traffic plans
- Gravity isolation when performing maintenance.
- Compulsory Seatbelt use designed in
- Brake improvements
- Speed Limiting
- Windrows

A Worked Example - Fatal LHD Incidents



Results of LHD Incidents

Nationality	O/C	U/G	UN	Total
Australia	35	59	2	96
United States	61	33	0	94
New Zealand	45	0	1	46
United Kingdom	4	3	0	7
Canada	0	1	1	2
TOTAL	145	96	4	245

Australian Incidents

STATES	O/C	U/G	UN
New South Wales	15	28	1
Queensland	15	14	0
Western Australia	2	14	1
Tasmania	2	2	0
South Australia	1	1	0
TOTALS	35	59	2

Mine and Type Incidents

Mine Type	Incidents
Non-Coal	174
Coal	64
Unknown	7
Operation Type	
Open-Cut	145
Underground	96
Unknown	4

AGENT OF FATALITY	O/C	U/G	UNKNOWN
Unintended Operation of Equipment	62	25	1
Other	27	31	1
Contact with Moving or Rotating Plant	20	15	0
Fall of Roof/Sides/Highwall	7	13	0
Unknown	13	1	0
Fall from Heights	4	3	0
Asphyxiation	1	3	0
Drowning	4	0	0
Uncontrolled Release of Energy	4	0	0
Electrocution	0	2	1
Explosives	0	2	0
Fire	2	0	0
Catastrophic Failure	0	0	1
Gas Ignition Explosion	1	0	0
Inrush	0	1	0
Sub TOTALS	145	96	4
GRAND TOTAL			245

Identifying Critical Issues Involved in Serious Accidents – to Achieve Zero Harm

Activity at Time of Incident

ACTIVITY	INCIDENTS
Transport	93
Maintenance	38
Production	32
Unknown	31
Other	23
Support Services	16
Loading/Unloading	12
TOTAL	245

From a Manual Sorting

Issues			
Roll Over/ROPS/FOPS	55	Visibility	10
Crushed	54	Unloading/Loading	10
Isolation	51	Work/Bucket	8
Pedestrian	35	Remote Control	7
Maintenance	33	Design	6
Driver	24	As a Crane	4
Fall (Roof/Sides/Highwall)	20	Electrocution	4
Loss of Control Operating	19	Take Out Supports	4
Seatbelts	17	Tyre/Rims	3
Edge	16	Trainee/Passenger	3
Compartment	12	Gas Line	2
Collision	12	Light Vehicles	2
Brakes	11	Access	1
		TOTAL	423

Conclusions

- Highest number of incidents at Open-Cut mines
- Highest number of incidents at Non-Coal mines
- Main agent of fatality is from Unintended Operation of Equipment
- Second highest agent of fatality is Contact with Moving or Rotating Plant
- Main activity being performed when incidents occur is during Transport.
- Another dangerous activity is LHD Maintenance

Recommendations

- Implementation and improvement in the mine traffic plans
- Power and gravity isolation when performing maintenance.
- More Thorough Investigations

Learning from Others Mistakes

- There are no new types of accidents, only people with short memories.
- Those who cannot learn from history are doomed to repeat it.
- Living at risk is jumping off the cliff and building your wings on the way down.

Further Additions to Project

- Integration of data with Mechanical Design Guidelines
- Analysis of Injury data along with current fatality data for some equipment

How to obtain a copy of the Database

- It is freely available on the DPI website in excel spreadsheet form for download.
- A report regarding the background to the project is also available for download.
- www.dpi.nsw.gov.au