

Mine Safety

Industry Research

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Industry &
Investment

micromex
research

Background

The NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS NSW) on behalf of the NSW Mine Safety Advisory Council (MSAC), appointed Micromex Research to develop, conduct and analyse a survey of mine site management representatives in order to measure current health indices for identified priority health issues within the NSW Mining and Extractives Industry.

This survey is designed to monitor industry progress toward effective management of identified hazards with health impacts. The resultant health indices will be utilised to assess actions being undertaken on-site and benchmarked against the desired approach for managing those risks intended by the legislation and MSAC endorsed guidance material.

The outcomes of the research program will allow evaluation of the indices by industry sector, and detail the following key occupational health areas:

- Noise
- Dust
- Diesel Particulate
- Fatigue
- MSD
- Health Management Guide



In August 2013, Micromex Research surveyed, via telephone, operators responsible for a total of 122 mines in NSW. A further 16 responses were faxed/emailed from mines.

Specifics of the Survey

Questionnaires

Micromex Research, together with the MSAC, developed the questionnaire.

Sample size



A sample size of 138 mines, out of a total number of 420, provided a maximum sampling error of approximately +/-6.84% at 95% confidence. Greater variants observed across smaller sub cells.

Data collection period

The surveys were completed during August 2013. Where respondents were unable to be contacted by phone after a minimum of 5 attempts, a reminder letter was sent to the mine operator requesting their participation. This resulted in a total of 16 surveys being received via email or fax.

Statistically significant differences by mine type

Within the report, statistically significant differences by mine type were identified by use of the 'One-Way Anova Test' and identified as follows:

-  A significantly higher percentage (by group)
-  A significantly lower percentage (by group)

NB: All percentages are calculated to the nearest whole number and therefore the total may not exactly equal 100%.

The methodology ensured a strong understanding of health risk management in the NSW Mining and Extractives Industry

Mine Health Indices

Key Measures

Mine Health Indices – Key Measures



Health Management Plan

		2011		2013	
Sites with a specific Health Management Plan as required under current legislation		92%		93%	
		Fully	Partially	Fully	Partially
Health management planning that follows the MSAC Health Management Guide		44%	39%	44%	34%
Health hazards with a formal and written assessment	Dust	75%	14%	76%	14%
	Hazardous substances	66%	26%	75%	15%
	Noise	63%	27%	62%	24%
	Fatigue	63%	29%	64%	17%
	MSD	29%	47%	34%	34%
	Diesel exhaust fumes	25%	27%	28%	33%
Health issues included in the training of all new employees		N/A		90%	
Perception of worker training in the control of health issues		3.83		3.83	
Perception of how well people in positions with specific OH&S responsibilities are trained		4.00		4.00	
Pre employment health screening carried out on the workforce		N/A		76%	
Post employment health screening carried out on the workforce		N/A		32%	

Mine Health Indices – Key Measures



Health Management Plan

Health hazards monitored by health surveillance	Dust	90%*
	Noise	86%*
	Hazardous substances	65%*
	Fatigue	63%*
	MSD	46%*
	Diesel exhaust fumes	40%*
Inclusion of illness management and rehabilitation in health management planning		84%*
Inclusion of education and awareness of other health issues in health management planning	Drug and alcohol abuse	91%*
	Fatigue	83%*
	Health	81%*
	Fitness	70%*
	Wellbeing	59%*
	Cardio-vascular risks	47%*
	Nutrition	43%*

* Due to a change in the wording of the questions, comparisons were not available with 2011.

Mine Health Indices – Key Measures



Health Management Plan

	2011		2013	
Formal employee assistance program accessible by all on-site	88%		74%	
	All site workers	Employees	All site workers	Employees
Inclusion of ongoing monitoring and evaluation of the effectiveness of the health management plan	26%	61%	31%	48%
Purely reactive approach to health management planning	4%		7%	
Indicators follow a set protocol	67%		51%	

Occupational Noise Management

	Fully	Partially	Fully	Partially
Identified occupational noise risks	67%	29%	64%	30%
Purely reactive approach to noise management	7%		4%	

Musculoskeletal Disorder

Program to identify risks in MSD	37%	47%
Purely reactive approach to MSD	21%	23%

Mine Health Indices – Key Measures



Diesel Particulate Management (Underground mining only)

Program to identify risks in diesel particulate management	73%	81%
Purely reactive approach to diesel particulate management	7%	16%

Fatigue Management

Program to identify risks in fatigue management	76%	78%
Purely reactive approach to fatigue management	8%	9%

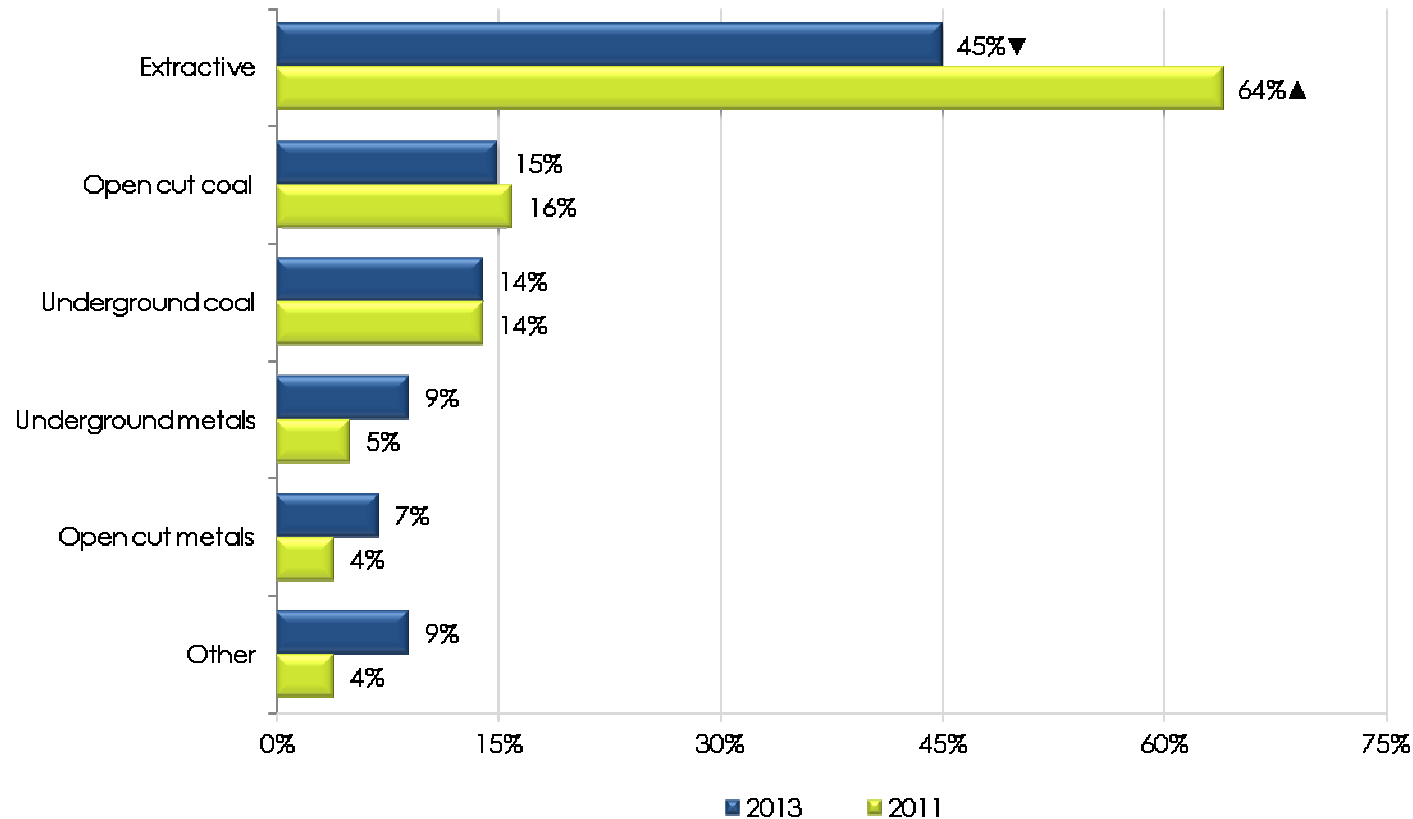
Dust Management

Program to identify risks in dust management	89%	86%
Purely reactive approach to dust management	2%	7%

The Detailed Response General Information

Respondents Are Predominantly From The Extractives Sector

Q. Which of the following sectors are you employed in?



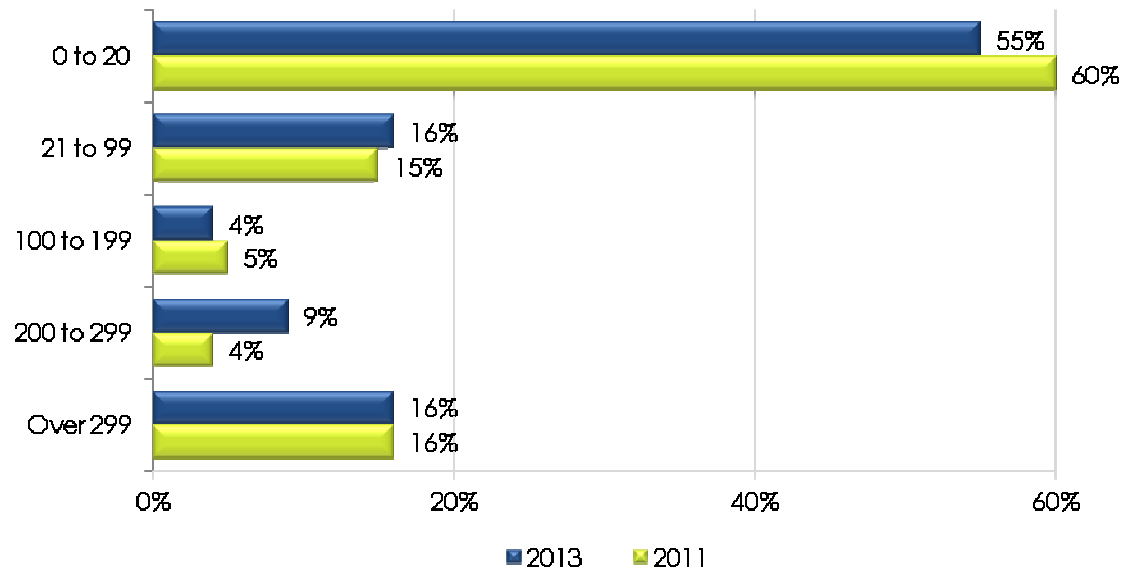
Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

There were significantly fewer from the extractive sector compared to 2011

A Variety Of Mine Sizes Are Represented, With 0-20 Employees Being The Largest Segment

Q. Total FTE employees and permanent contractors are Q4a plus Q4b.

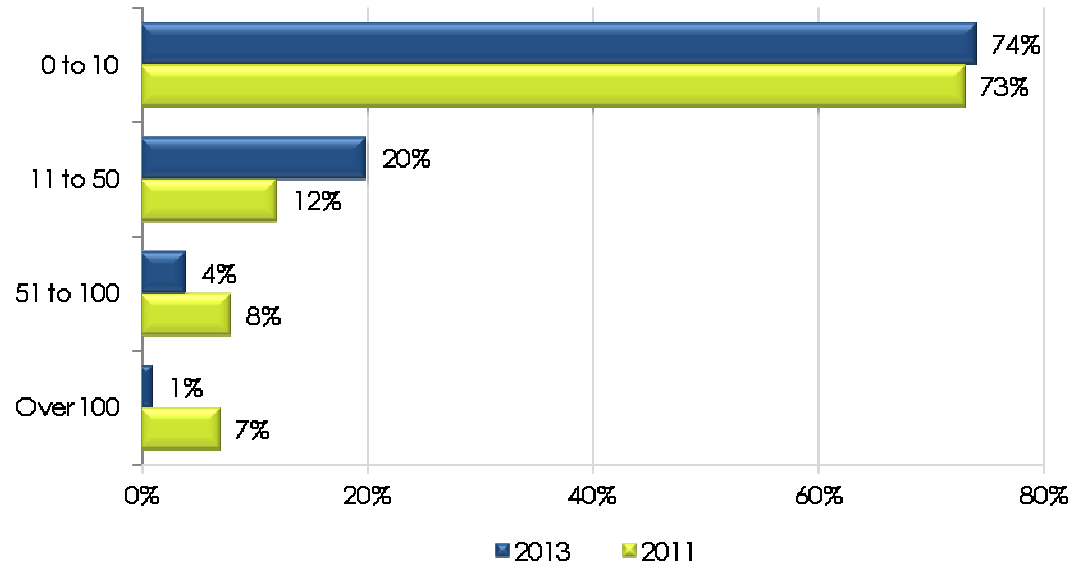


Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
0 to 20	13	57%	2	10%	1	5%	50	81%	76	55%
21 to 99	2	9%	5	24%	3	16%	12	19%	22	16%
100 to 199	1	4%	0	0%	4	21%	0	0%	6	4%
200 to 299	1	4%	5	24%	6	32%	0	0%	12	9%
Over 299	6	26%	9	43%	5	26%	0	0%	22	16%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

More than half of the mines surveyed had fewer than 21 employees, and 16% had over 299 employees

Respondents Were Not Generally Large Employers Of Part Time Contractors

Q. How many part time contractors are in your operation on site?



Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
0 to 10	15	65%	11	52%	11	61%	55	90%	101	74%
11 to 50	8	35%	6	29%	5	28%	5	8%	27	20%
51 to 100	0	0%	3	14%	1	6%	1	2%	6	4%
Over 100	0	0%	1	5%	1	6%	0	0%	2	1%
Total	23	100%	21	100%	18	100%	61	100%	136	100%

Extractive sector is the most likely to utilise part time contractors

Health Management Plan



The Vast Majority of Mines Have Health Management Plans As Required By Legislation

Q. Does your site have a specific Health Management Plan as required under current legislation?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	23	100%	17	81%	19	100%	57	92%	128	93%
No	0	0%	4	19%	0	0%	5	8%	10	7%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

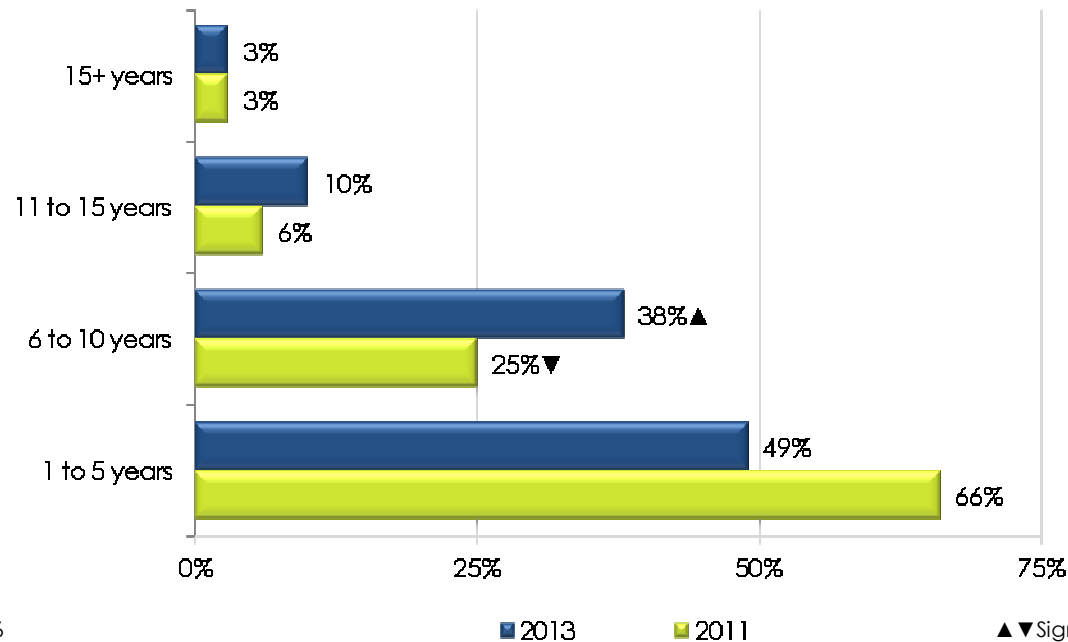
Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	195	95%	53	95%	86	86%	206	92%	128	93%
No	11	5%	3	5%	14	14%	18	8%	10	7%
Total	206	100%	56	100%	100	100%	224	100%	138	100%

Mines with 100+ employees are significantly less likely to have a Health Management Plan than were mines with 0-20 employees

More Than Half Of Mines With Health Management Plans Have Been In Place 6 Years Or More

- Q. Does your site have a specific Health Management Plan as required under current legislation?
 Q. If yes, how long has it been in place?

Correlations by year	2011		2013	
	Count	Column %	Count	Column %
Yes	206	92%	128	93%
No	18	8%	10	7%
Total	224	100%	138	100%



There has been a significant increase in Health Management Plans that have been in place for 6 to 10 years

44% Of Sites Indicate They Fully Follow The MSAC Health Management Guide

Q. Does your health management planning follow the Mine Safety Advisory Council Health Management Guide?

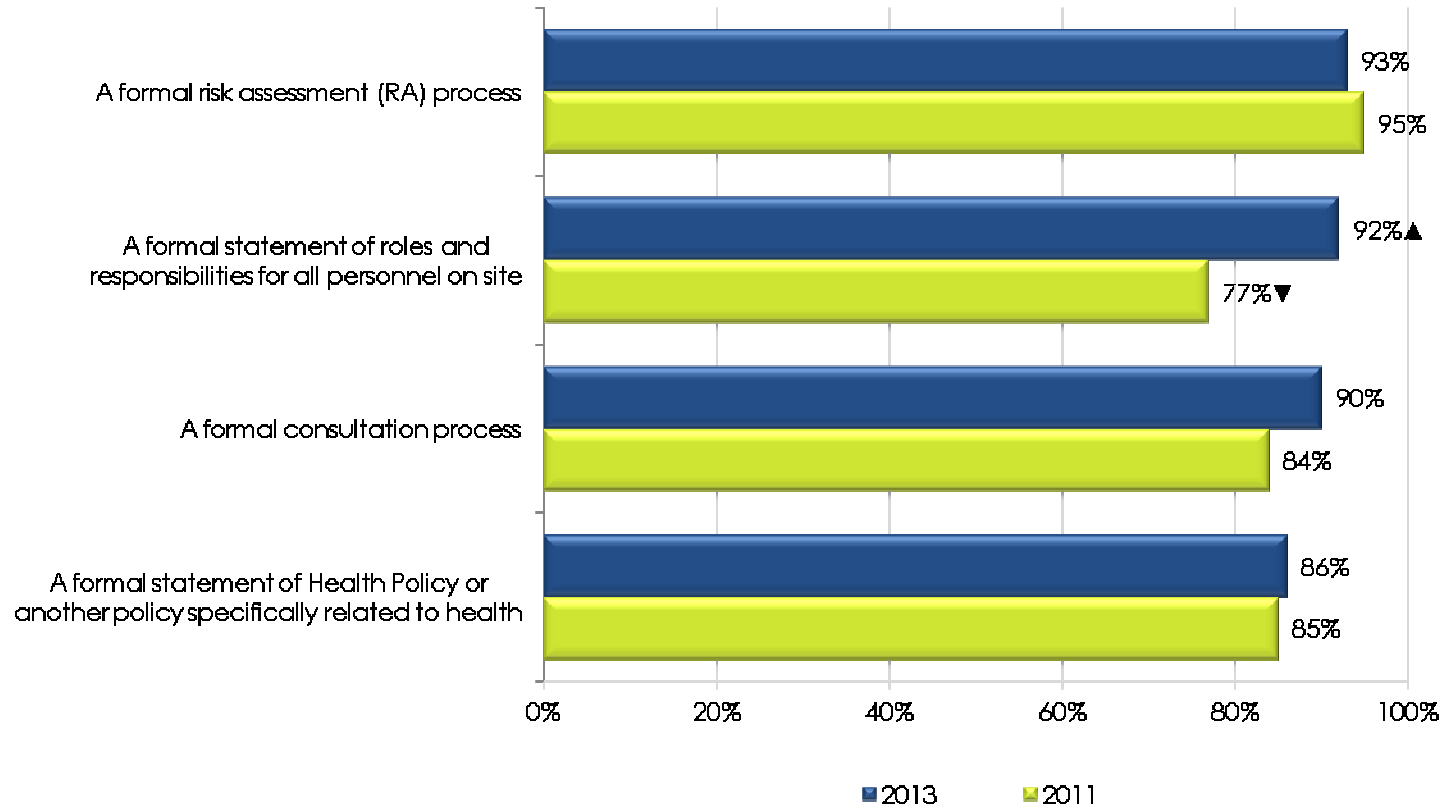
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Fully	6	26%	11	52%	9	47%	31	51%	60	44%
Partially	10	43%	7	33%	4	21%	20	33%	46	34%
No	2	9%	2	10%	0	0%	1	2%	6	4%
Don't know	5	22%	1	5%	6	32%	9	15%	25	18%
Total	23	100%	21	100%	19	100%	61	100%	137	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Fully	33	46%	12	52%	15	35%	97	44%	60	44%
Partially	24	34%	7	30%	15	35%	85	39%	46	34%
No	2	3%	1	4%	3	7%	8	4%	6	4%
Don't know	12	17%	3	13%	10	23%	30	14%	25	18%
Total	71	100%	23	100%	43	100%	220	100%	137	100%

34% of sites are identified as only partially following the MSAC Guide

The Majority Of Sites Indicate Their Health Management Plan Includes The 4 Prompted Key Measures

Q. Does your Health Management Plan specifically include:



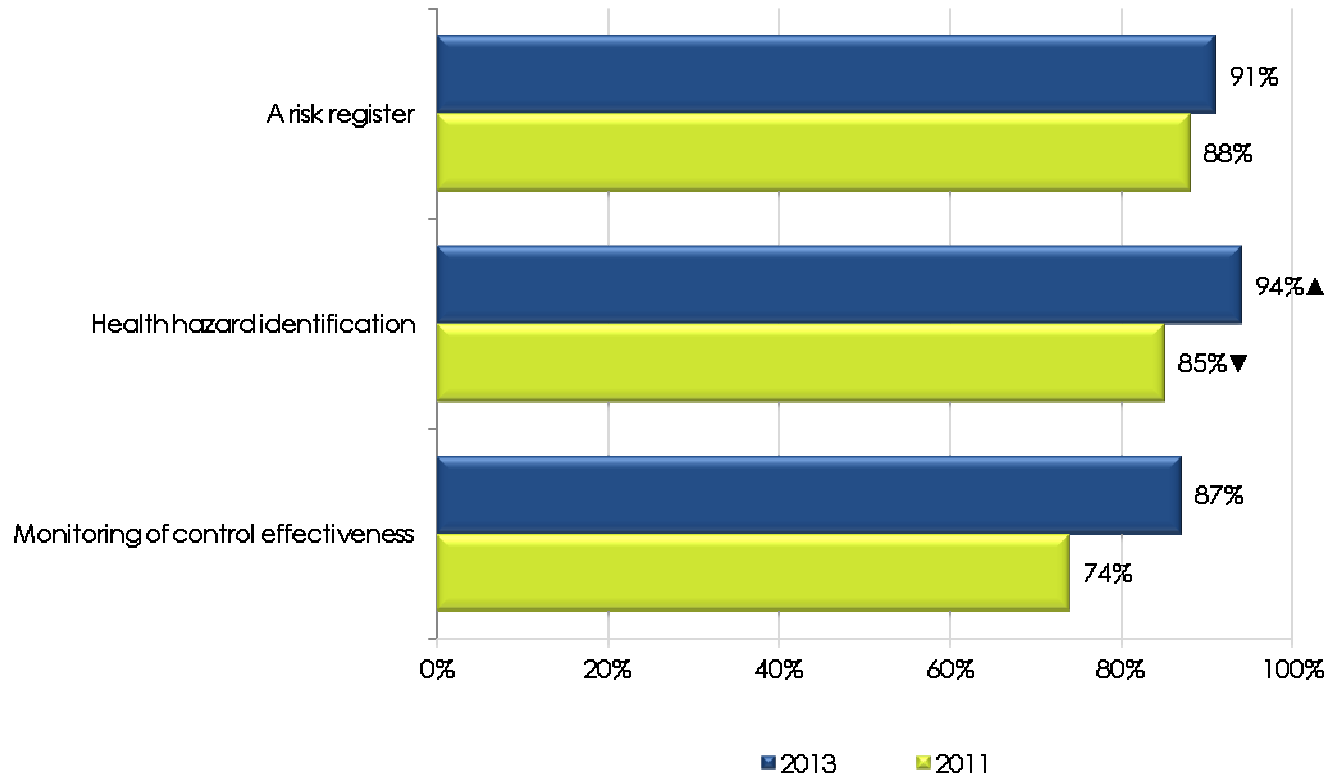
Base: 2013 n=134, 2011 n = 220

▲▼ Significant increase/decrease

There was a significant increase in the inclusion of a formal statement of roles and responsibilities in the Health Plan Management

Sites With A Formal Risk Assessment Process Indicate The Majority Include A Risk Register, Hazard Identification, And Monitoring Of Control Effectiveness

Q. Does this Risk Assessment specifically include:



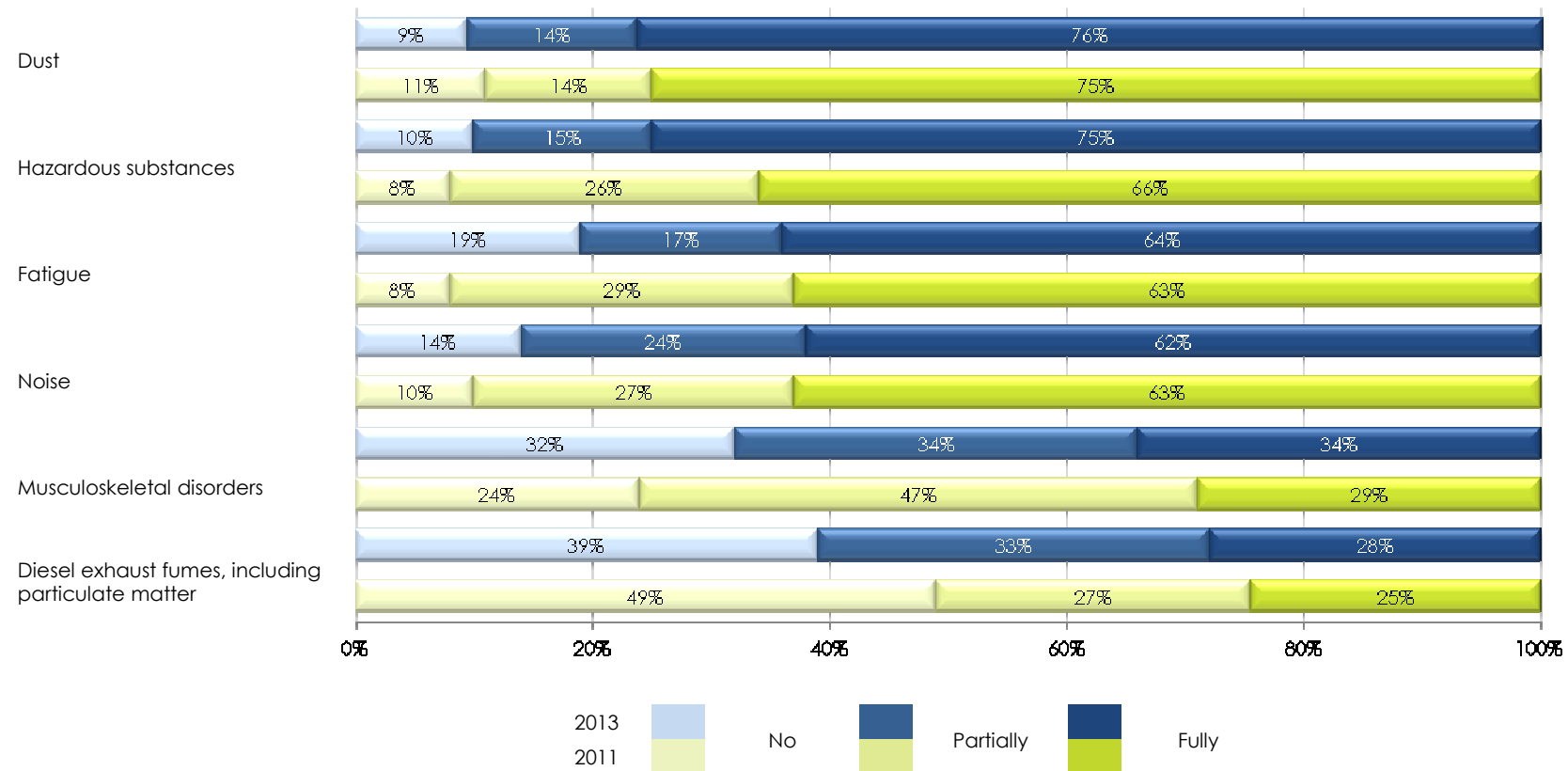
Base: 2013 n=125, 2011 n = 183

▲▼ Significant increase/decrease

Since 2011, there has been a significant improvement in the inclusion of health hazard identification in the risk assessment

Respondents Indicate Dust, Hazardous Substances, Noise And Fatigue Overwhelmingly Have Formal And Written Assessments

Q. Which of the following health hazards have a formal and written assessment?



Base: 2013 n=138, 2011 n = 224

Diesel exhaust fumes and musculoskeletal disorders are the least likely health hazards to have formal and written assessments

90% Of Respondents Indicate That Health Issues Are Included In The Training Of All New Employees

Q. Are health issues included in the training of all new employees?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	19	83%	20	95%	18	95%	55	89%	124	90%
No	4	17%	1	5%	1	5%	7	11%	14	10%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	62	86%	23	100%	39	91%	158	71%	124	90%
No	10	14%	0	0%	4	9%	66	29%	14	10%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

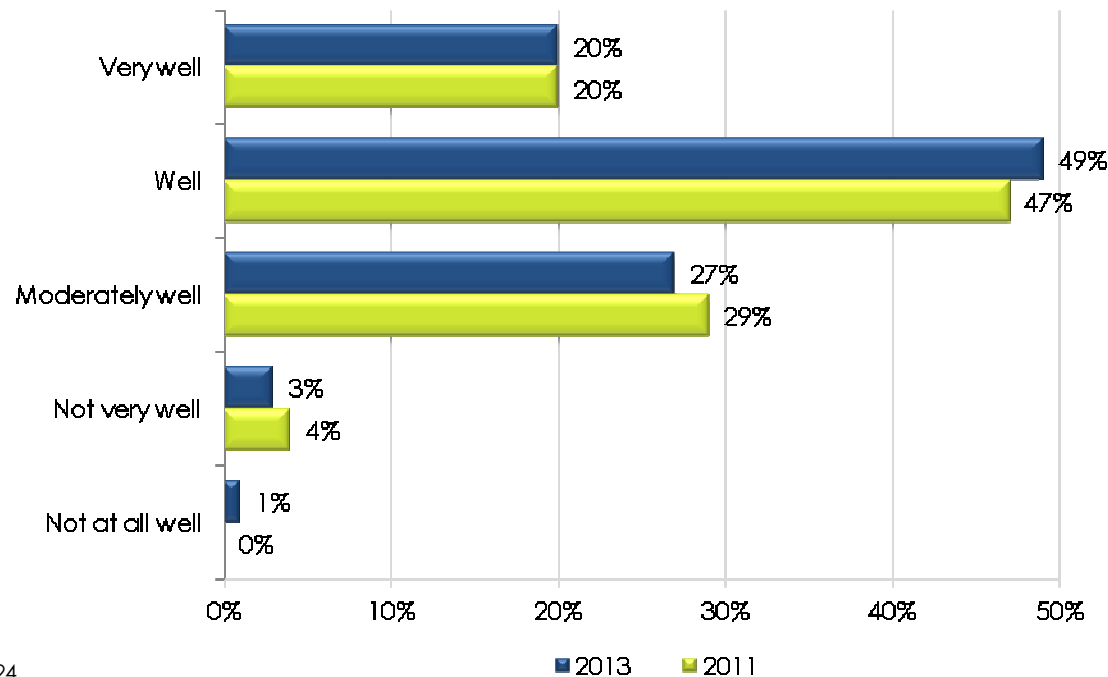
Since 2011 there has been a significant increase in the percentage of Health Issues included in the training of all new employees

Respondents Rated Worker Training On Health Issues As 'Moderately High'

Q. Overall, how well do you believe workers at your site are trained in the control of health issues?

Correlations by sector	Metalliferous	Open cut coal	Underground coal	Extractive	Overall
Mean ratings	3.65	3.81	3.95	3.94	3.83

Correlations by number of employees & year	0 to 20	21 to 99	100 or more	2011	2013
Mean ratings	3.92	3.8	3.66	3.83	3.83



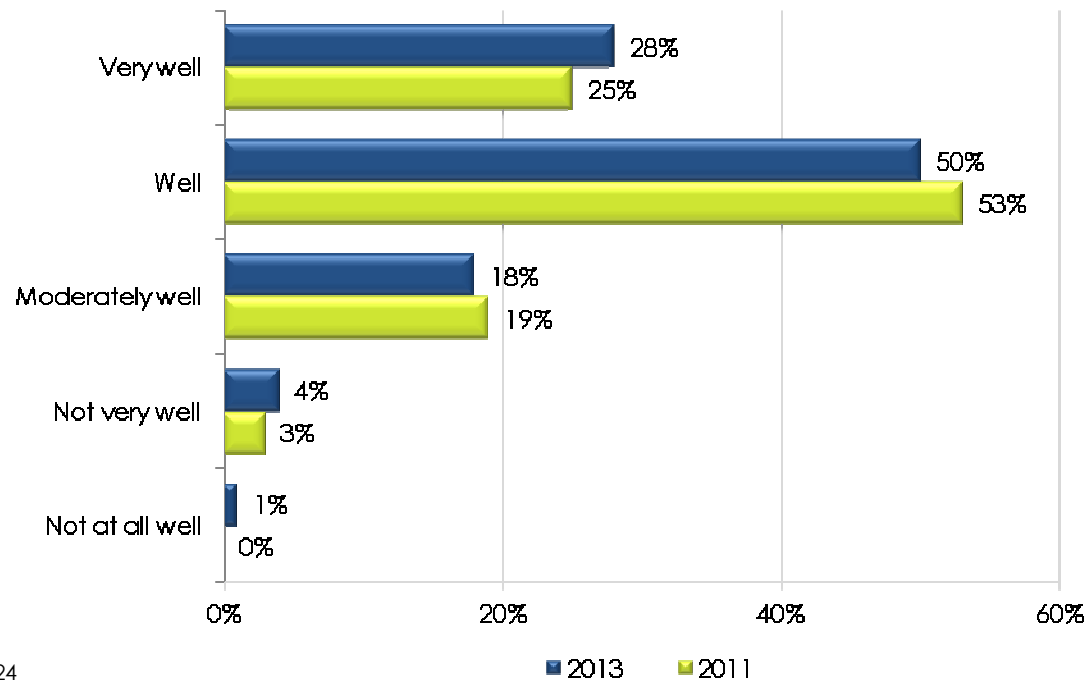
69% of respondents indicated that worker training on health issues at their site was 'well' or 'very well'

Respondents Rated Training Of Colleagues At Their Site With Specific OH&S Responsibilities As Being 'High'

Q. Overall, how well do you believe people in positions at your site with specific OHS responsibilities are trained on how to carry out their roles and responsibilities?

Correlations by sector	Metalliferous	Open cut coal	Underground coal	Extractive	Overall
Mean ratings	4.04	4.00	4.16	3.97	4.00

Correlations by number of employees & year	0 to 20	21 to 99	100 or more	2011	2013
Mean ratings	4.05	3.91	3.94	4.00	4.00



Base: 2013 n=138, 2011 n = 224

78% of respondents indicated that colleagues with OH&S responsibilities training was 'well' or 'very well'

76% Of Sites Carry Out Pre-Employment Health Screening

Q. Is pre employment health screening carried out on the workforce?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	18	78%	21	100%	19	100%	40	65%	105	76%
No	5	22%	0	0%	0	0%	22	35%	33	24%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	39	54%	23	100%	43	100%	105	76%
No	33	46%	0	0%	0	0%	33	24%
Total	72	100%	23	100%	43	100%	138	100%

The coal sector is the most likely to carry out pre-employment health screening; Extractive is the least likely sector

32% Of Sites Carry Out Post Employment Health Screening

Q. *Is post employment health screening carried out on the workforce?*

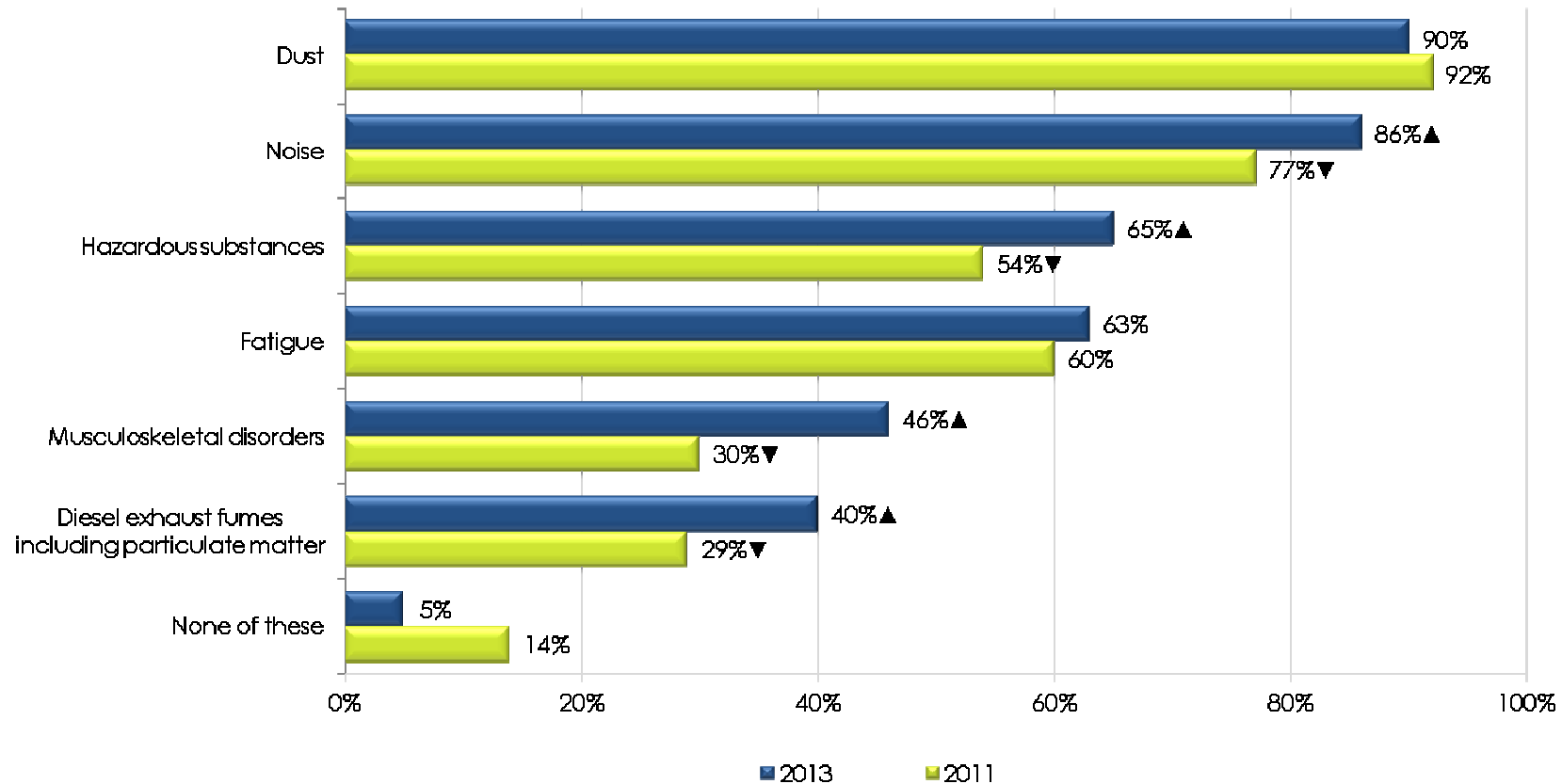
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	5	22%	8	38%	8	42%	21	34%	44	32%
No	18	78%	13	62%	11	58%	41	66%	94	68%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	20	28%	10	43%	14	33%	44	32%
No	52	72%	13	57%	29	67%	94	68%
Total	72	100%	23	100%	43	100%	138	100%

The majority of sites, across all sectors and size, fail to conduct post employment health screening for employees

Dust, Noise, And Hazardous Substances Are The Hazards Most Likely To Be Monitored By Health Surveillance

Q. Which of the following health hazards are monitored by health surveillance?



Base: 2013 n=138, 2011 n = 224

▲▼ Significant increase/decrease

‘Noise’, ‘hazardous substances’, ‘musculoskeletal disorders’ and ‘diesel exhaust fumes’ increased significantly from 2011

The Coal Sector Overwhelming Adheres To Order 41 Screening

Q. (Coal sites only) Is the health surveillance carried out through the mandatory Order 41 screening or is it instigated by your organisation's own assessments?

Correlations by sector	Open cut coal		Underground coal		Overall	
	Count	Column %	Count	Column %	Count	Column %
Yes	19	95%	18	95%	37	95%
No	1	5%	1	5%	2	5%
Don't know	0	0%	0	0%	0	2%
Total	20	100%	19	100%	39	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	3	100%	6	100%	28	94%	74	97%	37	95%
No	0	0%	0	0%	2	6%	1	1%	2	5%
Don't know	0	0%	0	0%	0	0%	1	1%	0	0%
Total	3	100%	6	100%	30	100%	76	100%	39	100%

Adherence to Order 41 is consistent across all size operations and sectors (Open and Underground)

The Majority Of Sites (84%) Indicate Health Management Planning Includes Illness Management And Rehabilitation

Q. Does your health management planning include illness management and rehabilitation?

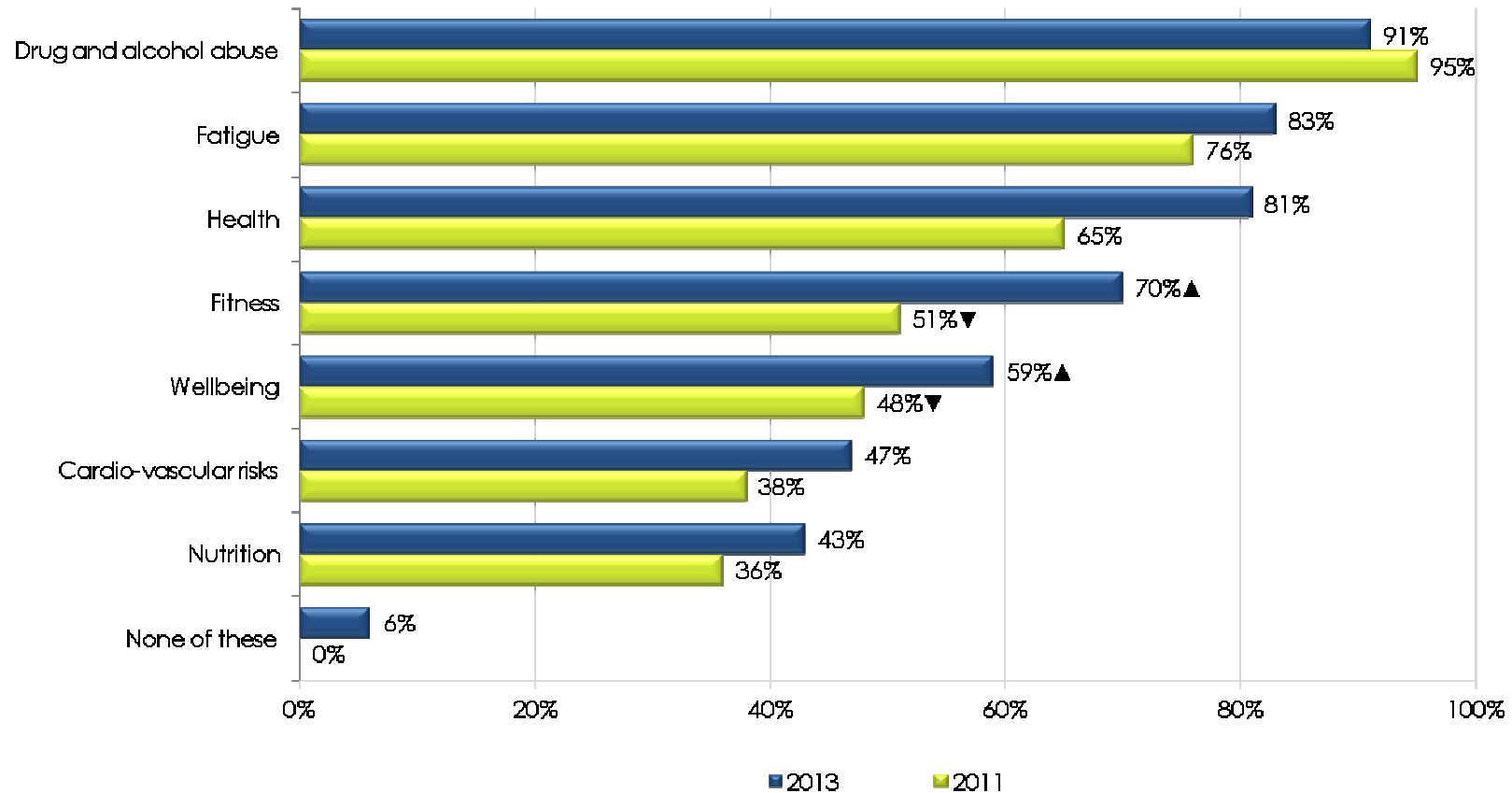
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	17	74%	20	95%	17	89%	52	84%	116	84%
No	6	26%	1	5%	2	11%	10	16%	22	16%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	54	75%	23	100%	39	91%	213	95%	116	84%
No	18	25%	0	0%	4	9%	11	5%	22	16%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

A significant decline is observed in the number of sites indicating management planning for illness management and rehabilitation

Drug/Alcohol Abuse, Fatigue, And Health Are The Issues Most Likely To Include Education And Awareness

Q. Does your health management planning include education and awareness of other issues such as?



Base: 2013 n=138, 2011 n = 224

▲▼ Significant increase/decrease

Education and awareness plays a large role in health management planning for a number of health issues

Respondents Indicate That Employee Assistance Programs Are Available To All Employees In 74% Of Sites

Q. *Is there a formal employee assistance program accessible by all at this site?*

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	15	65%	21	100%	19	100%	38	61%	102	74%
No	8	35%	0	0%	0	0%	24	39%	36	26%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	39	54%	21	91%	42	98%	197	88%	102	74%
No	33	46%	2	9%	1	2%	27	12%	36	26%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

There has been a significant decline in the number of sites that have Employee Assistance programs since 2011. Sites with 0-20 employees are significantly less likely to have a Program

On-going Evaluation Of The Effectiveness Of Health Management Planning For At Least Some Employees Is Included In 79% Of Health Management Planning

Q. Does your health management planning include on-going monitoring and evaluation of the effectiveness of the health management plan?

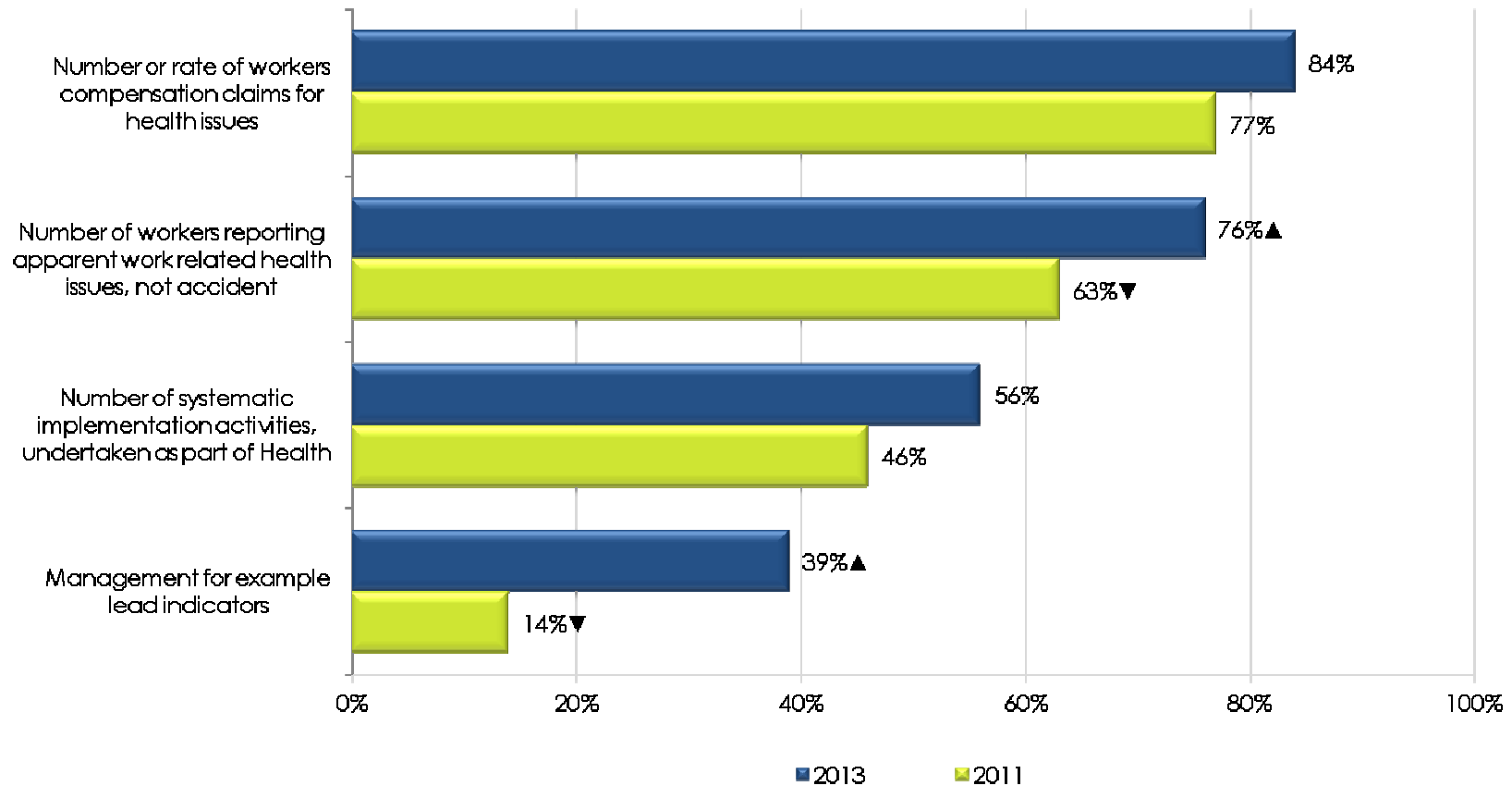
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes - but limited to employees	11	48%	9	43%	10	53%	33	53%	66	48%
Yes - for all site workers	7	30%	10	48%	8	42%	12	19%	43	31%
No	5	22%	2	10%	1	5%	17	27%	29	21%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes - but limited to employees	33	46%	14	61%	19	44%	136	61%	66	48%
Yes - for all site workers	17	24%	7	30%	19	44%	59	26%	43	31%
No	22	31%	2	9%	5	12%	29	13%	29	21%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

A significant decline is observed in sites that conduct evaluations limited to employees, with a significant increase in sites not evaluating effectiveness of health management planning at all

Numbers Of Workers Compensation Claims And Number Of Work Related Health Issues Are the Predominant Indicators For Monitoring Planning Effectiveness

Q. Which of the following indicators are identified in your health management planning to monitor its effectiveness?



Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

Quantitative indicators are predominantly used to measure planning effectiveness

Respondents Indicate That Only About Half Of Indicators Follow A Set Protocol

Q. Do indicators follow a set protocol?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	13	57%	13	62%	15	79%	26	42%	70	51%
No	10	43%	8	38%	4	21%	36	58%	68	49%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	25	35%	16	70%	29	67%	148	77%	70	51%
No	47	65%	7	30%	14	33%	44	23%	68	49%
Total	72	100%	23	100%	43	100%	192	100%	138	100%

There has been a significant decline in the number of sites where indicators follow a set protocol; Site of 0-20 employees are significantly less likely to follow a set protocol

31% Of Respondents Consider Their Sites Approach To Health Management Planning To Be Proactive

Q. Overall, do you consider your site's approach to Health management planning to be:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	4	17%	1	5%	0	0%	3	5%	9	7%
Proactive	5	22%	8	38%	5	26%	23	37%	43	31%
A mix of both	14	61%	12	57%	14	74%	36	58%	86	62%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	6	8%	0	0%	3	7%	10	4%	9	7%
Proactive	23	32%	8	35%	12	28%	53	24%	43	31%
A mix of both	43	60%	15	65%	28	65%	161	72%	86	62%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

No significant differences were observed between sectors or size of sites

Occupational Noise Management

64% Of Respondents Indicate Their Sites As Having Fully Identified Noise Risks

Q. Have you identified your occupational noise risks?

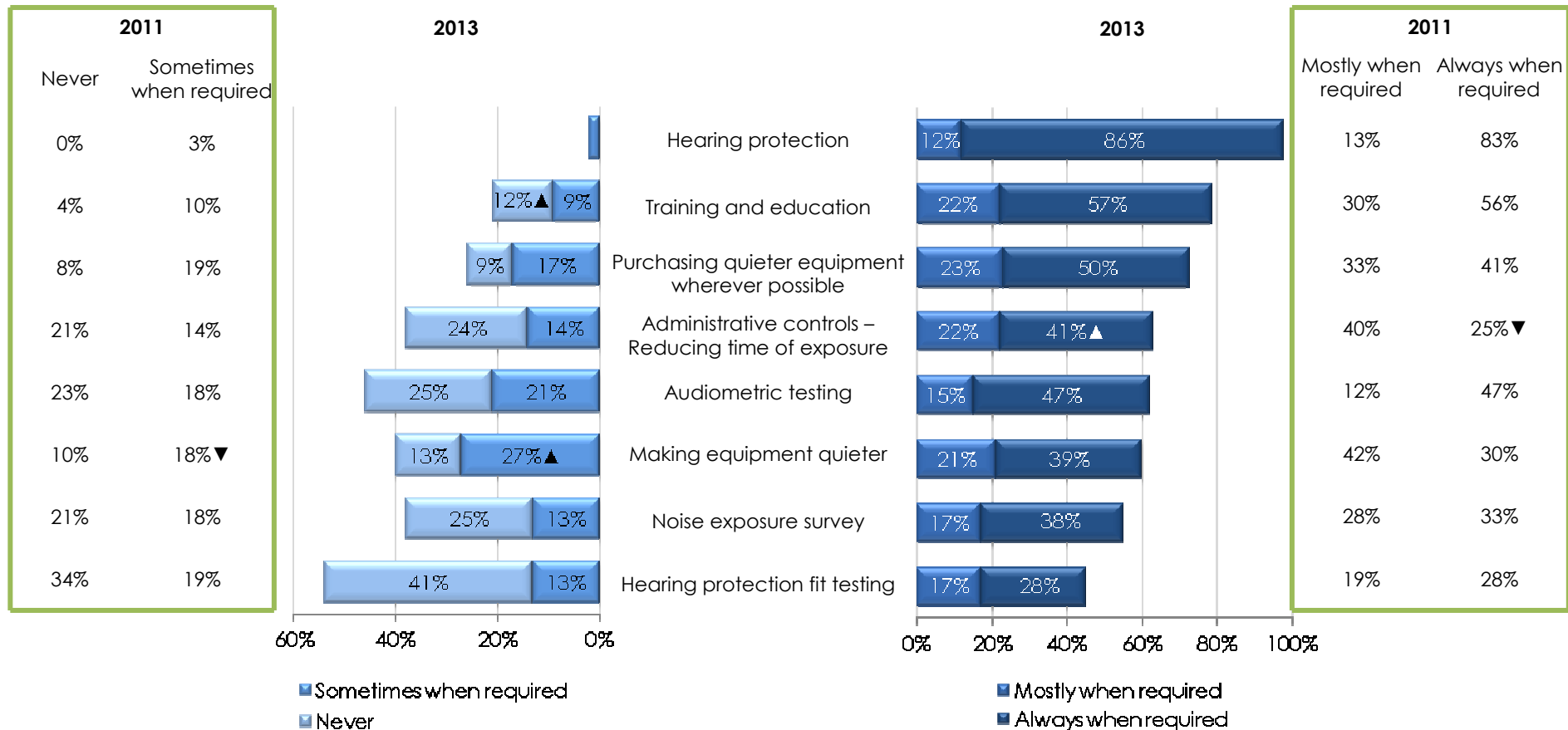
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Fully	14	61%	15	71%	11	58%	45	73%	89	64%
Partially	9	39%	5	24%	7	37%	13	21%	41	30%
No	0	0%	1	5%	1	5%	4	6%	8	6%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Fully	48	67%	16	70%	25	58%	150	67%	89	64%
Partially	18	25%	7	30%	16	37%	64	29%	41	30%
No	6	8%	0	0%	2	5%	10	4%	8	6%
Total	72	100%	23	100%	43	100%	220	100%	138	100%

No significant differences were observed by sector or size

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?



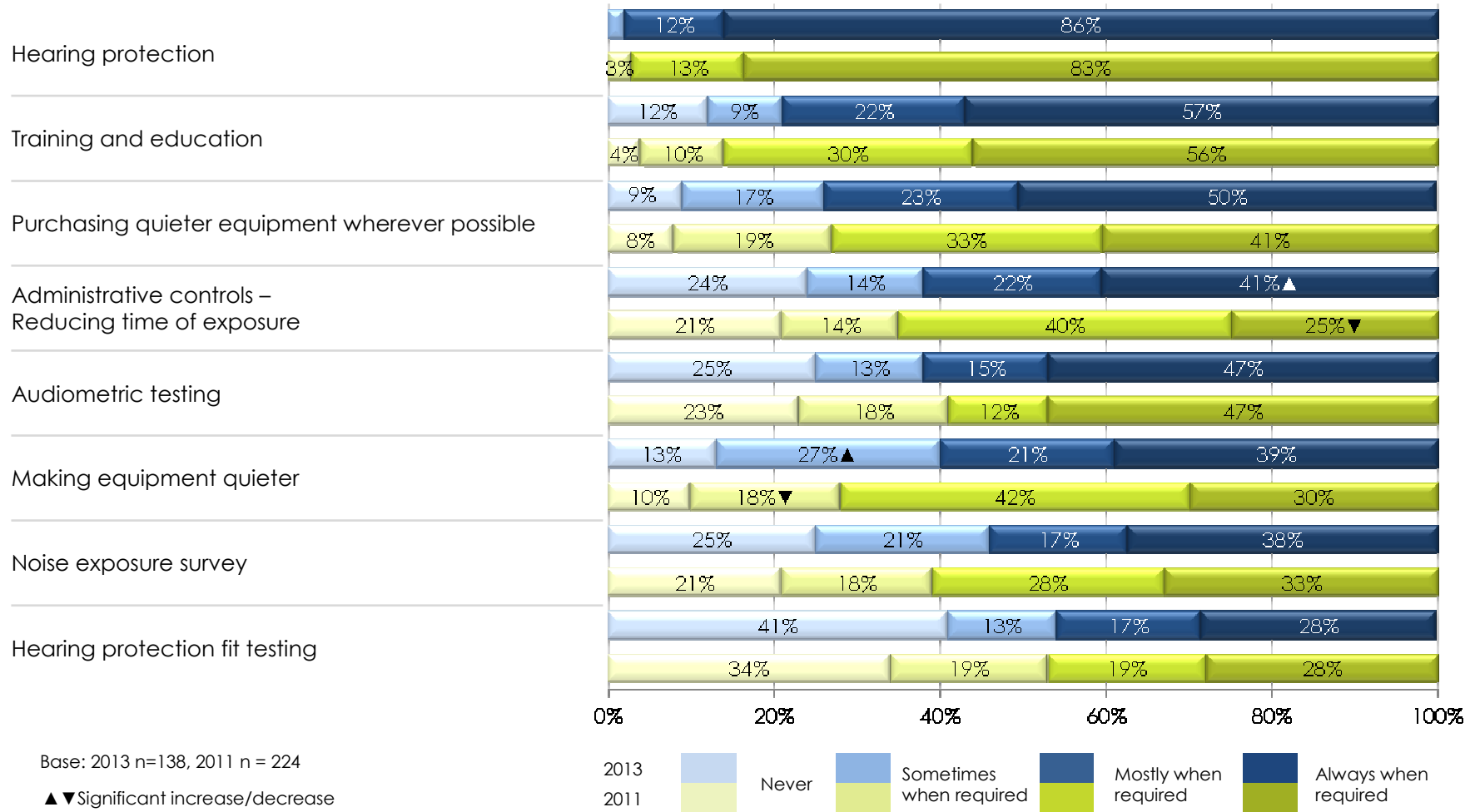
Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

Significant opportunities for utilising further measures are identified, with over one quarter of sites never or only sometimes utilising 6 of the 8 prompted measures

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?



Significant opportunities for utilising further measures are identified, with over one quarter of sites never or only sometimes utilising 6 of the 8 prompted measures

36% Of Respondents Rated Their Site's Approach To Noise Management As Proactive

Q. Overall, do you consider your site's approach to occupational noise management to be:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	1	4%	2	10%	0	0%	2	3%	5	4%
Proactive	6	26%	10	48%	5	26%	22	35%	49	36%
A mix of both	16	70%	9	43%	14	74%	38	61%	84	61%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	3	4%	0	0%	2	5%	16	7%	5	4%
Proactive	26	36%	9	39%	14	33%	71	32%	49	36%
A mix of both	43	60%	14	61%	27	63%	137	61%	84	61%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

While most respondents consider their site's approach to noise management as a mix, 36% see it as being proactive

Musculoskeletal Disorder (MSD)

Less Than Half Of Respondents Indicated A Program To Identify Risks Of MSD At Their Site

Q. Do you have a program to identify your risks in MSD?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	12	52%	13	62%	11	58%	24	39%	65	47%
No	11	48%	8	38%	8	42%	38	61%	73	53%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	27	38%	10	43%	28	65%	83	37%	65	47%
No	45	63%	13	57%	15	35%	141	63%	73	53%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

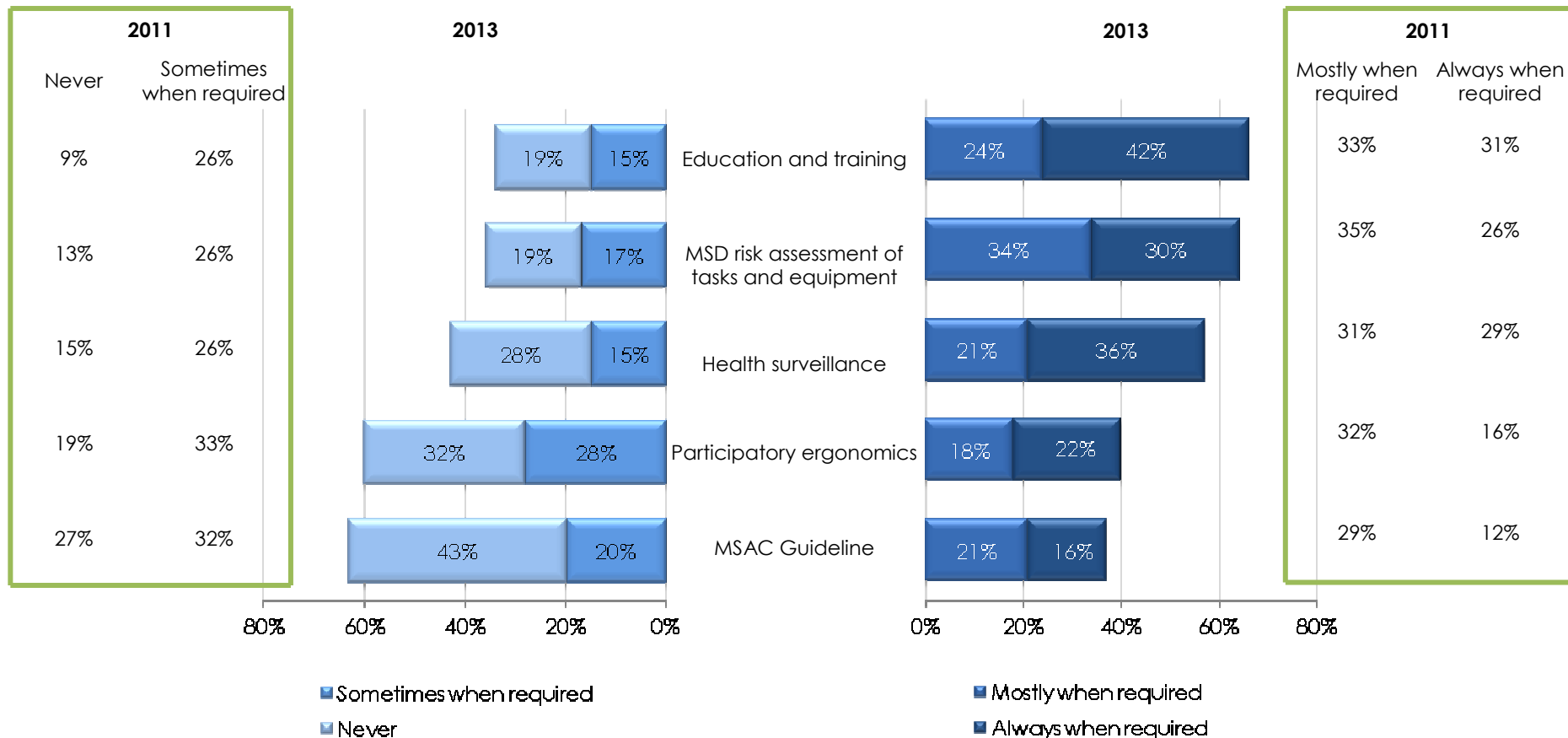
Q. Are they included in your health management planning?

Correlations by year	2011		2013	
	Count	Column %	Count	Column %
Yes	74	89%	59	91%
No	9	11%	6	9%
Total	83	100%	65	100%

Opportunity to expand awareness of risk of MSD by inclusion in all Health Management Planning, especially sites with 0-99 employees which are significantly less likely to have a Program

Sites Are Identified As Utilising A Variety Of Measures For MSD Management, With Training And Education The Most Common

Q. Which of the following do you utilise at your site for MSD management?



Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

Significant opportunities for utilising further measures are identified, with over one third of sites never or only sometimes utilising any prompted measures

A High Level (23%) Of Respondents Rated Their Sites Approach To MSD As Reactive

Q. Overall, do you consider your site's approach to MSD to be:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	6	26%	4	19%	2	11%	15	24%	32	23%
Proactive	3	13%	8	38%	2	11%	10	16%	25	18%
A mix of both	14	61%	9	43%	15	79%	37	60%	81	59%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	21	29%	4	17%	7	16%	47	21%	32	23%
Proactive	13	18%	1	4%	11	26%	38	17%	25	18%
A mix of both	38	53%	18	78%	25	58%	139	62%	81	59%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

Opportunities exist with MSD awareness, as 23% of respondents consider their site's approach to be reactive

Diesel Particulate Management (Underground mining only)

81% Of Respondents Indicate They Have A Program To Identify Risks In Diesel Particulate

Q. Do you have a program to identify your risks in diesel particulate management?

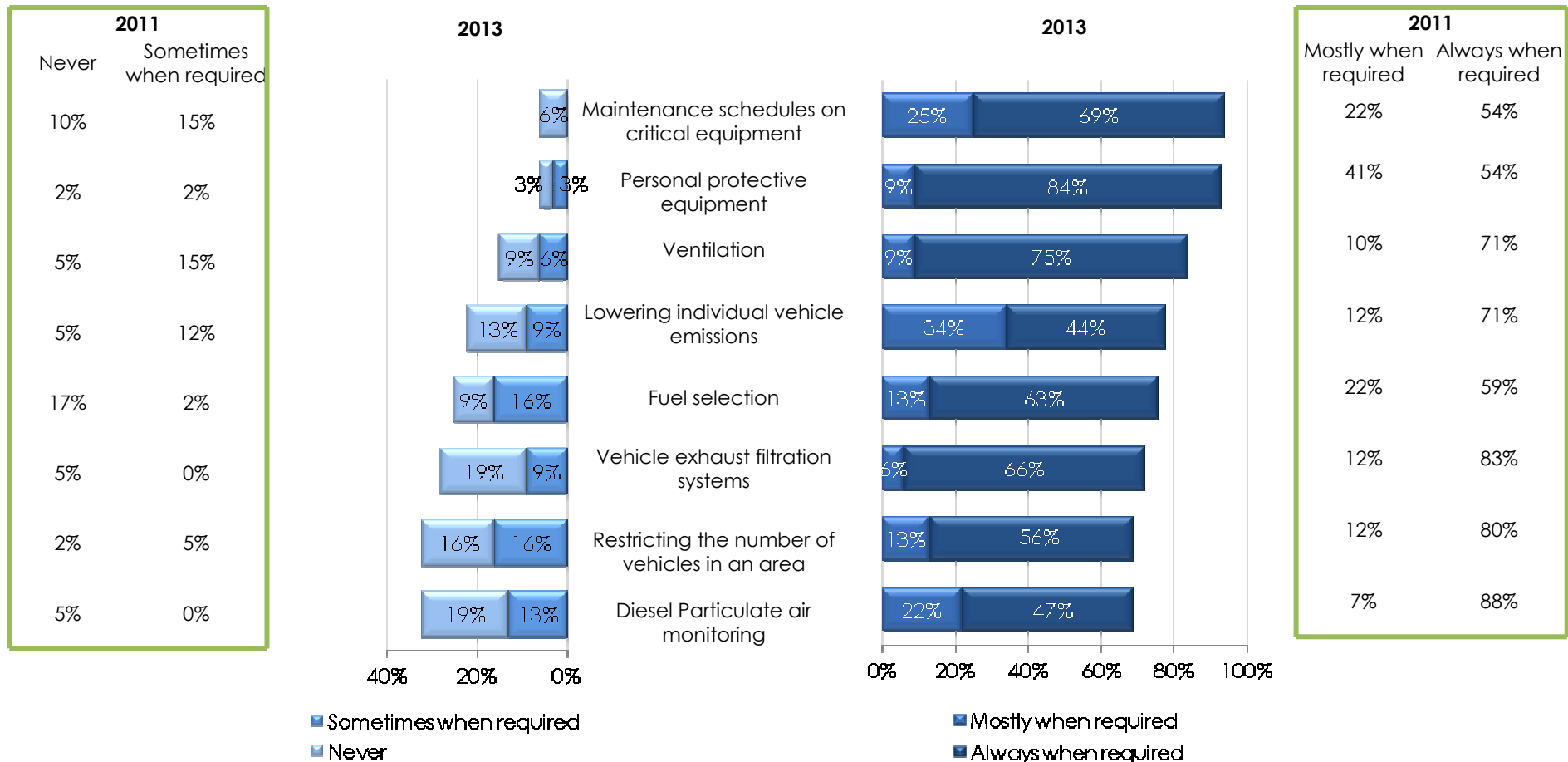
Correlations by sector	Metalliferous		Underground coal		Overall	
	Count	Column %	Count	Column %	Count	Column %
Yes	10	77%	16	84%	26	81%
No	3	23%	3	16%	6	19%
Total	13	100%	19	100%	32	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	2	40%	3	60%	21	95%	30	73%	26	81%
No	3	60%	2	40%	1	5%	11	27%	6	19%
Total	5	100%	5	100%	22	100%	41	100%	32	100%

Whilst not significant, there has been an increase in the use of programs since 2011

Sites Are Identified As Utilising A Variety Of Measures For Diesel Particulate Management, With Maintenance Schedules On Critical Equipment The Most Common

Q. Which of the following controls do you utilise to ensure diesel particulate management at this site?



Base: 2013 n=32, 2011 n = 41

▲ ▼ Significant increase/decrease

Significant opportunities for utilising further measures are identified, with over one third of sites never or only sometimes utilising 7 of the 8 prompted measures

A High Level (33%) Of Respondents Rated Their Site's Approach To Diesel Particulate Management As Reactive

Q. Overall, do you consider your site's approach to diesel particulate management to be:

Correlations by sector	Metalliferous		Underground coal		Overall	
	Count	Column %	Count	Column %	Count	Column %
Reactive	2	15%	3	16%	5	16%
Proactive	1	8%	7	37%	8	25%
A mix of both	10	77%	9	47%	19	59%
Total	13	100%	19	100%	32	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	1	20%	2	40%	2	9%	3	7%	5	16%
Proactive	1	20%	1	20%	6	27%	15	37%	8	25%
A mix of both	3	60%	2	40%	14	64%	23	56%	19	59%
Total	5	100%	5	100%	22	100%	41	100%	32	100%

Large opportunity to improve diesel particulate management exists as the percentage of respondents that consider their site's approach as reactive increased since 2011

Fatigue Management

78% Of Respondents Indicated A Program To Identify Risks In Fatigue Management At Their Site

Q. Do you have a program to identify your risks in fatigue management?

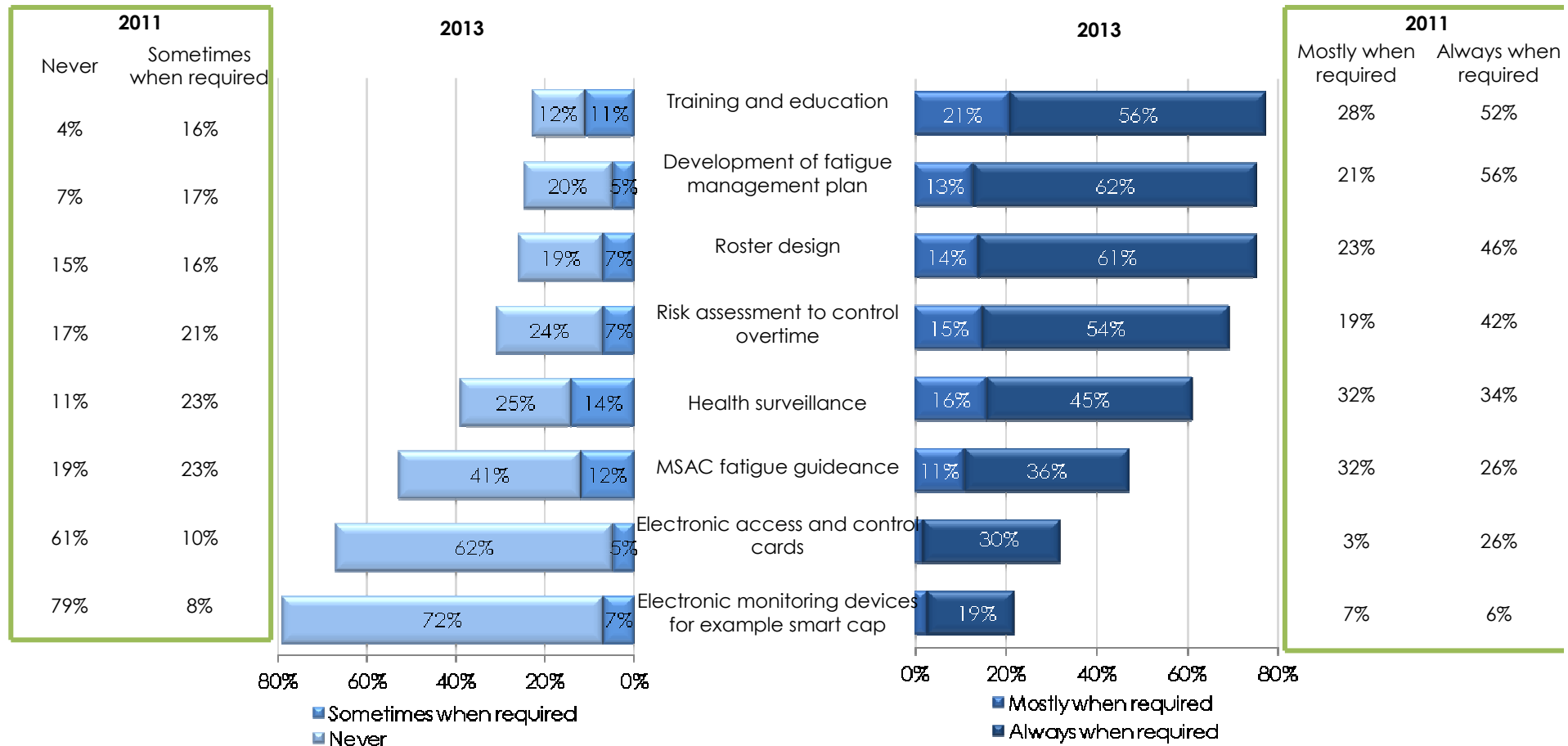
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	19	83%	20	95%	18	95%	43	69%	107	78%
No	4	17%	1	5%	1	5%	19	31%	31	22%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	46	64%	21	91%	40	93%	170	76%	107	78%
No	26	36%	2	9%	3	7%	54	24%	31	22%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

Sites with 0-20 employees are significantly less likely to have a Program to identify fatigue than are sites with 21+ employees

Sites Are Identified As Utilising A Variety Of Measures For Fatigue Management, With Training And Education The Most Common

Q. Which of the following controls do you utilise for fatigue management at this site?



Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

Significant opportunities for utilising further measures are identified, with over 30% of sites never or only sometimes utilising 7 of 8 prompted measures

39% Respondents Rated Their Sites Approach To Fatigue Management As Proactive

Q. Overall, do you consider your site's approach to fatigue management to be:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	2	9%	1	5%	0	0%	7	11%	13	9%
Proactive	8	35%	13	62%	8	42%	18	29%	54	39%
A mix of both	13	57%	7	33%	11	58%	37	60%	71	51%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	10	14%	2	9%	1	2%	19	8%	13	9%
Proactive	23	32%	9	39%	22	51%	70	31%	54	39%
A mix of both	39	54%	12	52%	20	47%	135	60%	71	51%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

Only 9% of respondents indicated their site had a reactive approach to fatigue management

Dust Management

86% Of Respondents Indicated A Program To Identify Risks In Dust Management At Their Site

Q. Do you have a program to identify your risks in dust management?

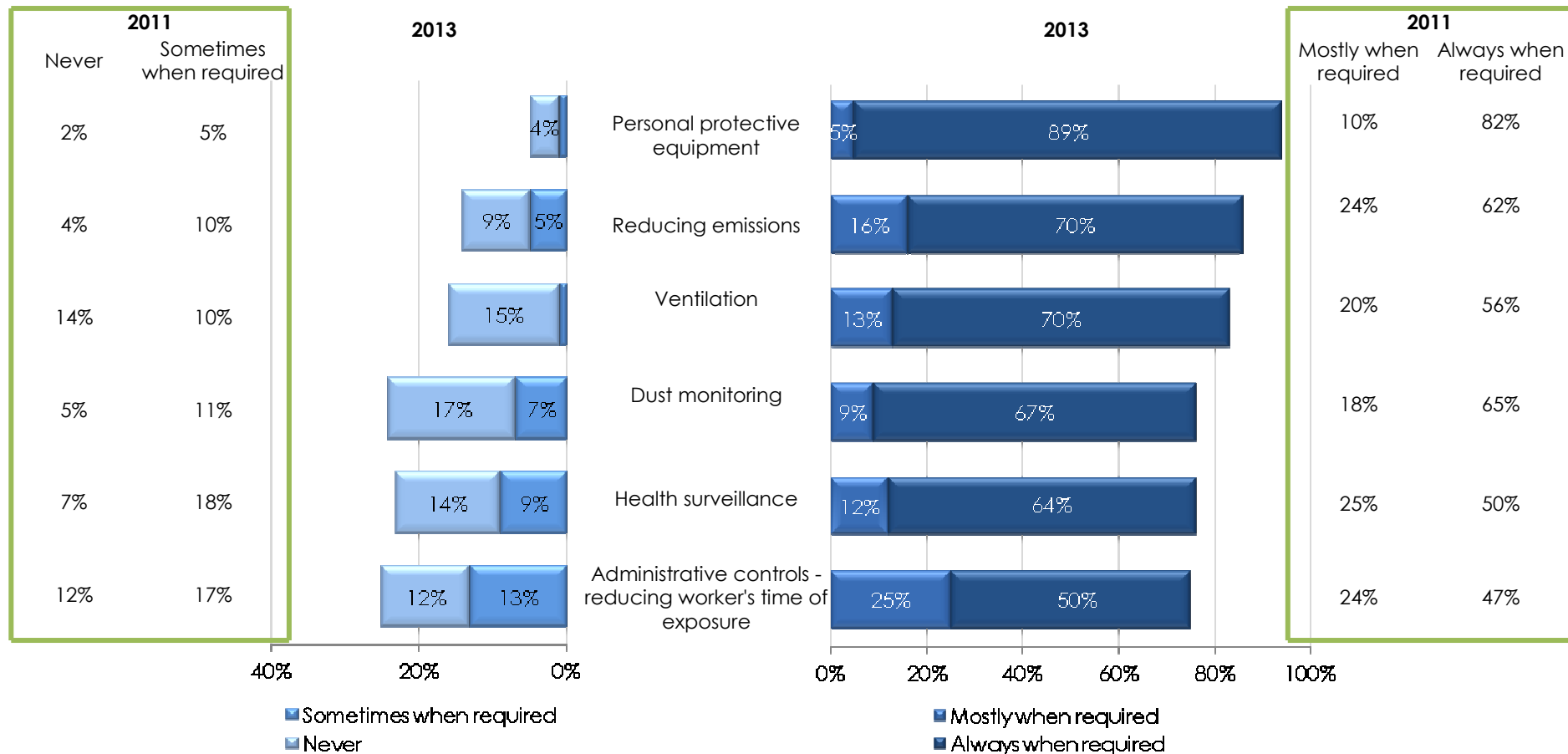
Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	21	91%	19	90%	19	100%	49	79%	118	86%
No	2	9%	2	10%	0	0%	13	21%	20	14%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	54	75%	23	100%	41	95%	199	89%	118	86%
No	18	25%	0	0%	2	5%	25	11%	20	14%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

Sites with 100+ employees are significantly more likely to have programs for Dust Management than are sites with 0-20 employees

Sites Are Identified As Utilising A Variety Of Measures For Dust Management, With Personal Protective Equipment The Most Common

Q. Which of the following controls do you utilise for dust management at this site?



Base: 2013 n=138, 2011 n = 224

▲ ▼ Significant increase/decrease

Fewer than 25% of sites are not utilising the 6 prompted measures

46% Respondents Rated Their Sites Approach To Dust Management As Proactive

Q. Overall, do you consider your site's approach to dust management to be:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	2	9%	2	10%	0	0%	6	10%	10	7%
Proactive	11	48%	14	67%	9	47%	21	35%	62	46%
A mix of both	10	43%	5	24%	10	53%	33	55%	63	47%
Total	23	100%	21	100%	19	100%	60	100%	135	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reactive	8	11%	0	0%	2	5%	5	2%	10	7%
Proactive	26	37%	10	43%	26	62%	92	41%	62	46%
A mix of both	36	51%	13	57%	14	33%	127	57%	63	47%
Total	70	100%	23	100%	42	100%	224	100%	135	100%

A significant increase is observed in the percentage of sites considered reactive in 2013, and sites with 100+ employees are significantly more likely to be proactive than are those with 0-20 employees

Other Comments

Q. *Do you have any other comments you would like to make with regards to the effective management of identified health hazards within the mining industry?*

We try to be as pro-active as much as possible (2)

Audited periodically through the lifecycle of the contractor and is required to be pre qualified prior to tendering for any work. The process of pre qualifying ensures the contractor has a safety management system in place, and the system is compliant

has just appointed a person to implement/manage health management within the construction materials business

Companies with low number of employees will find it very difficult to be compliant with OHS guidelines

Contractor management is hard to deal with when not knowing what they have been doing elsewhere and for how long

Focus on health is important and is appreciated by both workers and mine management

Good to see surveys like this becoming more frequent in the coal industry. Assisting in continual improvement 'a good thing'

Hydration is a major issue that is not addressed

Impact of long shifts, isolation from family, etc. on mental health and wellbeing

Individual responsibility of maintaining physical health for work ie diet control

Industry is doing a great job with the OH&S side of things

Information sharing between industry and regulators is leading to a better environment for all

Local branch of the mines in Orange are great to work with

Making sure supervisors and managers are able to identify health hazards

Q. *Do you have any other comments you would like to make with regards to the effective management of identified health hazards within the mining industry?*

Not enough focus on musculoskeletal disorders

Open cut mining requires a large amount of time sitting, more focus needs to be placed on this area to avoid back issues etc.

Overall support for health hazards are lacking in NSW compared to other mining areas

Production and cost cutting impacts on health programs

Quarries are operated on a lower budget and as such, we can't afford the level or focus like undercut or open cut mining

Quarrying is quite different to mining

Project is a \$1.5 billion dollar construction project, which crossed the boundaries between the open cut operation and the coal processing operation. The workforce is predominately contractor base with a small 'owners' team to manage

Small mines version of this is required

The challenge is to ensure that people operating at supervisor level are aware of, and using, the MSMP

The company standards have minimum requirements for managing health hazards, and each site is audited against these standards periodically, this audit may also include subcontractors

The GFC and coal industry downturn has placed a huge restraint in resources (both financial and physical) to be able to give 100% effectiveness to health initiatives

The tasks being undertaken are varied, with some highly specialised. The health hazards are required to be identified and managed by the contractor, and this is monitored through the BBRA, and contractor bridging documents.

Training for OHS focuses on safety and not the health aspects

When in pre operational mode and have no employees on or active at this time, therefore the survey is irrelevant at this stage all of these items requested have been identified and will be developed prior to do any activity

Appendix

Q. What is your current position or job title?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Owner/Manager	12	52%	8	40%	10	53%	52	84%	89	65%
OH&S Manager/Supervisor	10	43%	11	55%	9	47%	4	6%	39	28%
Other	1	4%	1	5%	0	0%	6	10%	9	7%
Total	23	100%	20	100%	19	100%	62	100%	137	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Owner/Manager	58	81%	17	74%	14	33%	125	56%	89	65%
OH&S Manager/Supervisor	7	10%	5	22%	27	64%	85	38%	39	28%
Other	7	10%	1	4%	1	2%	14	6%	9	7%
Total	72	100%	23	100%	42	100%	224	100%	137	100%

The Age Of Health Management Plans Are Consistent By Sector/Size

- Q. Does your site have a specific Health Management Plan as required under current legislation?
Q. (If yes, how long has it been in place?)

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
1 to 5 years	14	64%	9	56%	6	33%	22	14	58	49%
6 to 10 years	7	32%	5	31%	11	61%	20	7	45	38%
11 to 15 years	1	5%	1	6%	1	6%	8	1	12	10%
15+ years	0	0%	1	6%	0	0%	2	0	3	3%
Total	22	100%	16	100%	18	100%	52	22	118	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
1 to 5 years	31	50%	8	42%	19	51%	126	66%	58	49%
6 to 10 years	23	37%	8	42%	14	38%	47	25%	45	38%
11 to 15 years	7	11%	2	11%	3	8%	11	6%	12	10%
15+ years	1	2%	1	5%	1	3%	6	3%	3	3%
Total	62	100%	19	100%	37	100%	190	100%	118	100%

- Q. Are you familiar with the Mine Safety Advisory Council Health Management Guide?
 Q. (If no), is health specifically included in any other management plan?
 Q. (If yes), what plan?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	0	0%	4	100%	0	0%	3	60%	7	70%
No	0	0%	0	0%	0	0%	2	40%	3	30%
Total	0	0%	4	100%	0	0%	5	100%	10	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Yes	3	50%	1	100%	3	100%	12	67%	7	70%
No	3	50%	0	0%	0	0%	6	33%	3	30%
Total	6	100%	1	100%	3	100%	18	100%	10	100%

Health by design 1
 Work Health and Safety Management System 1

Key Measures Of The Health Management Plans By Sector/Size

Q. Does your Health Management Plan specifically include:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
A formal statement of roles and responsibilities for all personnel on site	20	91%	20	100%	16	84%	55	92%	123	92%
A formal statement of Health Policy or another policy specifically related to health	20	91%	15	75%	16	84%	54	90%	115	86%
A formal consultation process	16	73%	18	90%	18	95%	57	95%	120	90%
A formal risk assessment (RA) process	18	82%	19	95%	19	100%	56	93%	125	93%
Total	22	100%	20	100%	19	100%	60	100%	134	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
A formal statement of roles and responsibilities for all personnel on site	67	94%	20	87%	36	84%	217	98%	123	92%
A formal statement of Health Policy or another policy specifically related to health	60	85%	22	96%	33	77%	212	96%	115	86%
A formal consultation process	62	87%	22	96%	36	84%	213	96%	120	90%
A formal risk assessment (RA) process	65	92%	23	100%	37	86%	219	100%	125	93%
Total	71	100%	23	100%	43	100%	220	100%	134	100%

Risk Assessment By Sector/Size Is Consistent From Previous Report

Q. Does this Risk Assessment specifically include:

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Monitoring of control effectiveness	15	83%	18	95%	15	79%	49	88%	109	87%
Health hazard identification	18	100%	17	89%	18	95%	53	95%	118	94%
A risk register	16	89%	18	95%	17	89%	52	93%	114	91%
Total	18	100%	19	100%	19	100%	56	100%	125	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Monitoring of control effectiveness	57	88%	19	83%	33	89%	136	74%	109	87%
Health hazard identification	60	92%	22	96%	36	97%	156	85%	118	94%
A risk register	58	89%	23	100%	33	89%	161	88%	114	91%
Total	65	100%	23	100%	37	100%	183	100%	125	100%

Formal And Written Assessments By Sector

Q. Which of the following health hazards have a formal and written assessment?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Noise	Fully	13	57%	15	71%	11	58%	41	66%	85	62%
	Partially	5	22%	4	19%	7	37%	13	21%	33	24%
	No	5	22%	2	10%	1	5%	8	13%	20	14%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Musculoskeletal disorders	Fully	9	39%	7	33%	8	42%	20	32%	47	34%
	Partially	7	30%	9	43%	10	53%	17	27%	47	34%
	No	7	30%	5	24%	1	5%	25	40%	44	32%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Hazardous substances	Fully	18	78%	16	76%	15	79%	47	76%	103	75%
	Partially	2	9%	3	14%	4	21%	9	15%	21	15%
	No	3	13%	2	10%	0	0%	6	10%	14	10%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Dust	Fully	17	74%	15	71%	18	95%	48	77%	105	76%
	Partially	4	17%	3	14%	1	5%	8	13%	20	14%
	No	2	9%	3	14%	0	0%	6	10%	13	9%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Fatigue	Fully	15	65%	17	81%	18	95%	36	58%	89	64%
	Partially	2	9%	1	5%	1	5%	13	21%	23	17%
	No	6	26%	3	14%	0	0%	13	21%	26	19%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Diesel exhaust fumes, including particulate matter	Fully	6	26%	5	24%	11	58%	13	21%	38	28%
	Partially	9	39%	8	38%	7	37%	17	27%	46	33%
	No	8	35%	8	38%	1	5%	32	52%	54	39%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Formal And Written Assessments By Size

Q. Which of the following health hazards have a formal and written assessment?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Noise	Fully	45	63%	16	70%	24	56%	142	63%	85	62%
	Partially	15	21%	5	22%	13	30%	60	27%	33	24%
	No	12	17%	2	9%	6	14%	22	10%	20	14%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Musculoskeletal disorders	Fully	23	32%	8	35%	16	37%	64	29%	47	34%
	Partially	17	24%	10	43%	20	47%	106	47%	47	34%
	No	32	44%	5	22%	7	16%	54	24%	44	32%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Hazardous substances	Fully	48	67%	21	91%	34	79%	147	66%	103	75%
	Partially	13	18%	2	9%	6	14%	59	26%	21	15%
	No	11	15%	0	0%	3	7%	18	8%	14	10%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Dust	Fully	52	72%	19	83%	34	79%	168	75%	105	76%
	Partially	11	15%	3	13%	6	14%	31	14%	20	14%
	No	9	13%	1	4%	3	7%	25	11%	13	9%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Fatigue	Fully	33	46%	20	87%	36	84%	140	63%	89	64%
	Partially	18	25%	1	4%	4	9%	65	29%	23	17%
	No	21	29%	2	9%	3	7%	19	8%	26	19%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Diesel exhaust fumes, including particulate matter	Fully	18	25%	4	17%	16	37%	55	25%	38	28%
	Partially	19	26%	10	43%	17	40%	60	27%	46	33%
	No	35	49%	9	39%	10	23%	109	49%	54	39%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Other Hazards With Formal And Written Assessments

Q. Are there any other identified hazards that have a formal and written assessment? If yes, please specify.

Asbestos	7	GEO technical faults	1
Vibration	4	Health checklist	1
Confined spaces	3	Heat Stress	1
Element exposure	3	Height work	1
General safety	3	Hepatitis A virus	1
Alcohol and other drugs in the workplace	2	Layout of mine	1
Chemical substances	2	Man overboard	1
Fatal hazard protocols	2	Mine operations	1
General physical fitness	2	No able to specify	1
Mobile equipment	2	Observers during certain types of testing	1
Procedures for hot works, including radiation and sparks	2	Operating particular machinery	1
Radiation	2	Process for different levels of voltage	1
Strata failure	2	Regular medicals	1
Welding fume	2	Silica dust	1
Audiometric hearing testing	1	SMF	1
Blasting procedures	1	Smoking	1
Contaminants	1	Socio/psychological disorders	1
Cranes	1	Specialised air	1
Crystalline silica	1	Sun exposure	1
Dredging operation	1	Test RCDs are working	1
Electricity	1	Thermal environment	1
Environmental management plan	1	Transport	1
Ergonomics	1	UV exposure	1
Fatigue	1	Water management plan	1
Fixed plant operation	1		

Other Health Hazards Monitored

Q. Are there any other health hazards monitored by health surveillance? If yes, please specify.

Drug and alcohol	5	Diet	1
Lead	3	General physical fitness	1
Silica dust	3	GEO technical	1
Vibration	3	Heat stress	1
Asbestos	2	Hepatitis A and B	1
Gas	2	Lung bus	1
Radiation exposure	2	Physical mobility	1
Sewerage	2	Portable water	1
Biological agents in water supply	1	Sight	1
Blood lead levels	1	Skin cancer	1
Bone deterioration	1	Strata oil	1
Bowel health	1	Stress	1
Cancer detection and management	1	Temperature regulator rooms	1
Confined spaces	1		

Health Management Planning Covers A Wide Range Of Health Issues Across All Sectors/Sizes

Q. Does your health management planning include education and awareness of other issues such as?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Drug and alcohol abuse	20	87%	19	90%	18	95%	55	89%	125	91%
Fatigue	19	83%	20	95%	19	100%	47	76%	114	83%
Health	19	83%	20	95%	15	79%	48	77%	112	81%
Fitness	17	74%	19	90%	13	68%	43	69%	96	70%
Wellbeing	13	57%	14	67%	11	58%	40	65%	82	59%
Cardio-vascular risks	9	39%	14	67%	10	53%	30	48%	65	47%
Nutrition	9	39%	16	76%	11	58%	22	35%	59	43%
None of these	2	9%	1	5%	0	0%	5	8%	8	6%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by number of employees & by year	0 to 20		21 to 99		100 or more		2011*		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Drug and alcohol abuse	62	86%	23	100%	40	93%	212	95%	125	91%
Fatigue	51	71%	22	96%	41	95%	211	94%	114	83%
Health	53	74%	21	91%	38	88%	194	87%	112	81%
Fitness	42	58%	20	87%	34	79%	185	83%	96	70%
Wellbeing	37	51%	17	74%	28	65%	167	75%	82	59%
Cardio-vascular risks	29	40%	15	65%	21	49%	156	70%	65	47%
Nutrition	23	32%	11	48%	25	58%	142	63%	59	43%
None of these	6	8%	0	0%	2	5%	0	0%	8	6%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

* Continuity change to questionnaire in 2013.

Indicators To Monitor Planning Effectiveness By Sector/Size

Q. Which of the following indicators are identified in your health management planning to monitor its effectiveness?

Correlations by sector	Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Number or rate of workers compensation claims for health issues	21	91%	17	81%	18	95%	50	81%	116	84%
Number of workers reporting apparent work related health issues, not accident	19	83%	18	86%	15	79%	44	71%	105	76%
Number of systematic implementation activities, undertaken as part of Health Management	12	52%	14	67%	16	84%	27	44%	77	56%
Management	9	39%	13	62%	10	53%	20	32%	54	39%
Total	23	100%	21	100%	19	100%	62	100%	138	100%

Correlations by sector	0 to 20		21 to 99		100 or more		2011		2013	
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Number or rate of workers compensation claims for health issues	56	78%	21	91%	39	91%	173	77%	116	84%
Number of workers reporting apparent work related health issues, not accident	50	69%	19	83%	36	84%	142	63%	105	76%
Number of systematic implementation activities, undertaken as part of Health Management	35	49%	11	48%	31	72%	104	46%	77	56%
Management	22	31%	9	39%	23	53%			54	39%
Total	72	100%	23	100%	43	100%	224	100%	138	100%

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Hearing protection	Always when required	18	78%	15	71%	16	84%	57	92%	119	86%
	Mostly when required	5	22%	6	29%	2	11%	3	5%	16	12%
	Sometimes when required	0	0%	0	0%	1	5%	2	3%	3	2%
	Never	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Hearing protection fit testing	Always when required	6	26%	8	38%	10	53%	15	24%	39	28%
	Mostly when required	6	26%	3	14%	2	11%	11	18%	24	17%
	Sometimes when required	3	13%	4	19%	2	11%	6	10%	18	13%
	Never	8	35%	6	29%	5	26%	30	48%	57	41%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Audiometric testing	Always when required	5	22%	13	62%	16	84%	26	42%	65	47%
	Mostly when required	7	30%	3	14%	1	5%	10	16%	21	15%
	Sometimes when required	3	13%	5	24%	0	0%	8	13%	18	13%
	Never	8	35%	0	0%	2	11%	18	29%	34	25%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Noise exposure survey	Always when required	5	22%	15	71%	9	47%	22	35%	52	38%
	Mostly when required	7	30%	2	10%	4	21%	9	15%	23	17%
	Sometimes when required	7	30%	3	14%	5	26%	10	16%	29	21%
	Never	4	17%	1	5%	1	5%	21	34%	34	25%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Administrative controls - Reducing time of exposure	Always when required	10	43%	12	57%	6	32%	26	42%	56	41%
	Mostly when required	2	9%	4	19%	4	21%	16	26%	30	22%
	Sometimes when required	4	17%	4	19%	6	32%	3	5%	19	14%
	Never	7	30%	1	5%	3	16%	17	27%	33	24%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Training and education	Always when required	14	61%	13	62%	13	68%	34	55%	79	57%
	Mostly when required	6	26%	5	24%	3	16%	13	21%	30	22%
	Sometimes when required	1	4%	2	10%	2	11%	4	6%	12	9%
	Never	2	9%	1	5%	1	5%	11	18%	17	12%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Making equipment quieter	Always when required	6	26%	11	52%	6	32%	29	47%	54	39%
	Mostly when required	3	13%	4	19%	3	16%	16	26%	29	21%
	Sometimes when required	9	39%	5	24%	8	42%	11	18%	37	27%
	Never	5	22%	1	5%	2	11%	6	10%	18	13%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Purchasing quieter equipment wherever possible	Always when required	7	30%	13	62%	6	32%	38	61%	69	50%
	Mostly when required	6	26%	5	24%	5	26%	15	24%	32	23%
	Sometimes when required	5	22%	2	10%	8	42%	6	10%	24	17%
	Never	5	22%	1	5%	0	0%	3	5%	13	9%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Hearing protection	Always when required	65	90%	21	91%	33	77%	187	83%	119	86%
	Mostly when required	5	7%	2	9%	9	21%	29	13%	16	12%
	Sometimes when required	2	3%	0	0%	1	2%	7	3%	3	2%
	Never	0	0%	0	0%	0	0%	1	0%	0	0%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Hearing protection fit testing	Always when required	16	22%	6	26%	17	40%	63	28%	39	28%
	Mostly when required	11	15%	6	26%	7	16%	42	19%	24	17%
	Sometimes when required	7	10%	5	22%	6	14%	43	19%	18	13%
	Never	38	53%	6	26%	13	30%	76	34%	57	41%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Audiometric testing	Always when required	24	33%	13	57%	28	65%	106	47%	65	47%
	Mostly when required	9	13%	5	22%	7	16%	27	12%	21	15%
	Sometimes when required	10	14%	4	17%	4	9%	40	18%	18	13%
	Never	29	40%	1	4%	4	9%	51	23%	34	25%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Noise exposure survey	Always when required	16	22%	13	57%	23	53%	73	33%	52	38%
	Mostly when required	10	14%	5	22%	8	19%	63	28%	23	17%
	Sometimes when required	16	22%	4	17%	9	21%	41	18%	29	21%
	Never	30	42%	1	4%	3	7%	47	21%	34	25%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Sites Are Identified As Utilising A Variety Of Measures For Occupational Noise Management, With Hearing Protection The Most Common

Q. Which of the following do you utilise at your site for occupational noise management?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Administrative controls - Reducing time of exposure	Always when required	25	35%	16	70%	15	35%	56	25%	56	41%
	Mostly when required	18	25%	4	17%	8	19%	90	40%	30	22%
	Sometimes when required	4	6%	2	9%	13	30%	32	14%	19	14%
	Never	25	35%	1	4%	7	16%	46	21%	33	24%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Training and education	Always when required	36	50%	18	78%	25	58%	125	56%	79	57%
	Mostly when required	15	21%	3	13%	12	28%	68	30%	30	22%
	Sometimes when required	5	7%	2	9%	5	12%	23	10%	12	9%
	Never	16	22%	0	0%	1	2%	8	4%	17	12%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Making equipment quieter	Always when required	31	43%	8	35%	15	35%	68	30%	54	39%
	Mostly when required	15	21%	8	35%	6	14%	93	42%	29	21%
	Sometimes when required	15	21%	5	22%	17	40%	40	18%	37	27%
	Never	11	15%	2	9%	5	12%	23	10%	18	13%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Purchasing quieter equipment wherever possible	Always when required	43	60%	10	43%	16	37%	91	41%	69	50%
	Mostly when required	13	18%	9	39%	10	23%	73	33%	32	23%
	Sometimes when required	7	10%	2	9%	15	35%	43	19%	24	17%
	Never	9	13%	2	9%	2	5%	17	8%	13	9%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Other Measures For Noise Management

Q. Do you utilise any other measures at your site for occupational noise management? If yes, please specify.

Noise insulation	6
Noise Maps-visual aid	4
Noise monitoring	3
Onsite measuring of machinery	2
External monitoring around the site	1
Fit testing and advice on correct choice during periodic medicals	1
Hearing tests	1
Portable noise monitor	1
Restrict access to loud noise areas	1
Shrouding	1
Use decibel meters	1

Q. Which of the following do you utilise at your site for MSD management?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
MKD risk assessment of tasks and equipment	Always when required	6	26%	9	43%	6	32%	17	27%	42	30%
	Mostly when required	9	39%	5	24%	9	47%	21	34%	47	34%
	Sometimes when required	4	17%	3	14%	3	16%	12	19%	23	17%
	Never	4	17%	4	19%	1	5%	12	19%	26	19%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Health surveillance	Always when required	8	35%	9	43%	7	37%	22	35%	49	36%
	Mostly when required	4	17%	5	24%	7	37%	11	18%	29	21%
	Sometimes when required	5	22%	3	14%	3	16%	8	13%	21	15%
	Never	6	26%	4	19%	2	11%	21	34%	39	28%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Education and training	Always when required	10	43%	11	52%	9	47%	24	39%	58	42%
	Mostly when required	6	26%	5	24%	5	26%	15	24%	33	24%
	Sometimes when required	3	13%	0	0%	3	16%	12	19%	21	15%
	Never	4	17%	5	24%	2	11%	11	18%	26	19%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Participatory ergonomics	Always when required	5	22%	4	19%	5	26%	17	27%	31	22%
	Mostly when required	4	17%	6	29%	6	32%	8	13%	25	18%
	Sometimes when required	8	35%	4	19%	6	32%	16	26%	38	28%
	Never	6	26%	7	33%	2	11%	21	34%	44	32%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
MSAC Guideline	Always when required	5	22%	3	14%	2	11%	11	18%	22	16%
	Mostly when required	6	26%	6	29%	4	21%	12	19%	29	21%
	Sometimes when required	4	17%	7	33%	5	26%	8	13%	27	20%
	Never	8	35%	5	24%	8	42%	31	50%	60	43%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Q. Which of the following do you utilise at your site for MSD management?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
MKD risk assessment of tasks and equipment	Always when required	23	32%	6	26%	13	30%	59	26%	42	30%
	Mostly when required	21	29%	9	39%	17	40%	78	35%	47	34%
	Sometimes when required	9	13%	6	26%	8	19%	59	26%	23	17%
	Never	19	26%	2	9%	5	12%	28	13%	26	19%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Health surveillance	Always when required	23	32%	8	35%	18	42%	64	29%	49	36%
	Mostly when required	11	15%	6	26%	12	28%	69	31%	29	21%
	Sometimes when required	10	14%	5	22%	6	14%	58	26%	21	15%
	Never	28	39%	4	17%	7	16%	33	15%	39	28%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Education and training	Always when required	27	38%	12	52%	19	44%	70	31%	58	42%
	Mostly when required	16	22%	6	26%	11	26%	75	33%	33	24%
	Sometimes when required	12	17%	2	9%	7	16%	59	26%	21	15%
	Never	17	24%	3	13%	6	14%	20	9%	26	19%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Participatory ergonomics	Always when required	17	24%	5	22%	9	21%	35	16%	31	22%
	Mostly when required	11	15%	4	17%	10	23%	72	32%	25	18%
	Sometimes when required	14	19%	9	39%	15	35%	75	33%	38	28%
	Never	30	42%	5	22%	9	21%	42	19%	44	32%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
MSAC Guideline	Always when required	15	21%	2	9%	5	12%	26	12%	22	16%
	Mostly when required	14	19%	5	22%	10	23%	65	29%	29	21%
	Sometimes when required	7	10%	5	22%	15	35%	72	32%	27	20%
	Never	36	50%	11	48%	13	30%	61	27%	60	43%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Q. Do you utilise any other measures at your site for MSD?

Specialist Occupational Therapist advice one day per week	5
MSD courses and suits	2
Check lists for manual handling tasks	1
Crane equipment	1
Design of new equipment	1
Education and awareness training	1
Functional evaluations	1
Injury statistics	1
Job Fit	1
Lifting and carrying devices	1
Observation	1
Ongoing health and well being program	1
Step dot	1
Stretching and prompt cards for underground rooms	1
Toolbox talks	1
Visual consultation	1

Q. Which of the following controls do you utilise to ensure diesel particulate management at this site?

Correlations by sector		Metalliferous		Underground coal		Overall	
		Count	Column %	Count	Column %	Count	Column %
Lowering individual vehicle emissions	Always when required	2	15%	12	63%	14	44%
	Mostly when required	6	46%	5	26%	11	34%
	Sometimes when required	3	23%	0	0%	3	9%
	Never	2	15%	2	11%	4	13%
	Total	13	100%	19	100%	32	100%
Fuel selection	Always when required	6	46%	15	79%	21	66%
	Mostly when required	1	8%	1	5%	2	6%
	Sometimes when required	1	8%	2	11%	3	9%
	Never	5	38%	1	5%	6	19%
	Total	13	100%	19	100%	32	100%
Restricting the number of vehicles in an area	Always when required	6	46%	14	74%	20	63%
	Mostly when required	2	15%	2	11%	4	13%
	Sometimes when required	4	31%	1	5%	5	16%
	Never	1	8%	2	11%	3	9%
	Total	13	100%	19	100%	32	100%
Maintenance schedules on critical equipment	Always when required	7	54%	15	79%	22	69%
	Mostly when required	5	38%	3	16%	8	25%
	Sometimes when required	0	0%	0	0%	0	0%
	Never	1	8%	1	5%	2	6%
	Total	13	100%	19	100%	32	100%

Q. Which of the following controls do you utilise to ensure diesel particulate management at this site?

Correlations by sector		Metalliferous		Underground coal		Overall	
		Count	Column %	Count	Column %	Count	Column %
Vehicle exhaust filtration systems	Always when required	4	31%	11	58%	15	47%
	Mostly when required	4	31%	3	16%	7	22%
	Sometimes when required	2	15%	2	11%	4	13%
	Never	3	23%	3	16%	6	19%
	Total	13	100%	19	100%	32	100%
Ventilation	Always when required	11	85%	16	84%	27	84%
	Mostly when required	1	8%	2	11%	3	9%
	Sometimes when required	0	0%	1	5%	1	3%
	Never	1	8%	0	0%	1	3%
	Total	13	100%	19	100%	32	100%
Diesel Particulate air monitoring	Always when required	4	31%	14	74%	18	56%
	Mostly when required	3	23%	1	5%	4	13%
	Sometimes when required	3	23%	2	11%	5	16%
	Never	3	23%	2	11%	5	16%
	Total	13	100%	19	100%	32	100%
Personal protective equipment	Always when required	9	69%	15	79%	24	75%
	Mostly when required	1	8%	2	11%	3	9%
	Sometimes when required	1	8%	1	5%	2	6%
	Never	2	15%	1	5%	3	9%
	Total	13	100%	19	100%	32	100%

Q. Which of the following controls do you utilise to ensure diesel particulate management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Lowering individual vehicle emissions	Always when required	1	20%	0	0%	13	59%	24	59%	14	44%
	Mostly when required	1	20%	2	40%	8	36%	9	22%	11	34%
	Sometimes when required	1	20%	1	20%	1	5%	1	2%	3	9%
	Never	2	40%	2	40%	0	0%	7	17%	4	13%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Fuel selection	Always when required	2	40%	2	40%	17	77%	29	71%	21	66%
	Mostly when required	0	0%	1	20%	1	5%	5	12%	2	6%
	Sometimes when required	1	20%	0	0%	2	9%	5	12%	3	9%
	Never	2	40%	2	40%	2	9%	2	5%	6	19%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Restricting the number of vehicles in an area	Always when required	3	60%	2	40%	15	68%	22	54%	20	63%
	Mostly when required	0	0%	1	20%	3	14%	17	41%	4	13%
	Sometimes when required	1	20%	0	0%	4	18%	1	2%	5	16%
	Never	1	20%	2	40%	0	0%	1	2%	3	9%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Maintenance schedules on critical equipment	Always when required	2	40%	1	20%	19	86%	36	88%	22	69%
	Mostly when required	2	40%	3	60%	3	14%	3	7%	8	25%
	Sometimes when required	0	0%	0	0%	0	0%	0	0%	0	0%
	Never	1	20%	1	20%	0	0%	2	5%	2	6%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%

Q. Which of the following controls do you utilise to ensure diesel particulate management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Vehicle exhaust filtration systems	Always when required	3	60%	0	0%	12	55%	29	71%	15	47%
	Mostly when required	0	0%	3	60%	4	18%	4	10%	7	22%
	Sometimes when required	0	0%	0	0%	4	18%	6	15%	4	13%
	Never	2	40%	2	40%	2	9%	2	5%	6	19%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Ventilation	Always when required	4	80%	3	60%	20	91%	34	83%	27	84%
	Mostly when required	0	0%	1	20%	2	9%	5	12%	3	9%
	Sometimes when required	0	0%	1	20%	0	0%	0	0%	1	3%
	Never	1	20%	0	0%	0	0%	2	5%	1	3%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Diesel Particulate air monitoring	Always when required	1	20%	2	40%	15	68%	22	54%	18	56%
	Mostly when required	0	0%	1	20%	3	14%	9	22%	4	13%
	Sometimes when required	2	40%	0	0%	3	14%	6	15%	5	16%
	Never	2	40%	2	40%	1	5%	4	10%	5	16%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%
Personal protective equipment	Always when required	4	80%	3	60%	17	77%	33	80%	24	75%
	Mostly when required	0	0%	1	20%	2	9%	5	12%	3	9%
	Sometimes when required	0	0%	0	0%	2	9%	2	5%	2	6%
	Never	1	20%	1	20%	1	5%	1	2%	3	9%
	Total	5	100%	5	100%	22	100%	41	100%	32	100%

Other Measures For Diesel Particulate Management

Q. Do you utilise any other measures at your site for diesel particulate management? If yes, please specify.

Air conditioning on all machinery	1
Complete surveys on diesel emission	1
Comply with the different sites	1
Contractor refuelling	1
Filters	1
Mouth guards when required	1
New program of particulate monitoring - personal monitoring	1
No storing of fuel on site	1
Routine airborne dust sampling (elementary carbon)	1
Scrubber tank additive	1
Use of B20 Diesel	1
Weekly/monthly reporting back to workforce of recent test results	1

Q. Which of the following controls do you utilise for fatigue management at this site?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Development of a fatigue management plan	Always when required	16	70%	20	95%	15	79%	29	47%	84	61%
	Mostly when required	3	13%	0	0%	2	11%	12	19%	19	14%
	Sometimes when required	1	4%	0	0%	2	11%	4	6%	9	7%
	Never	3	13%	1	5%	0	0%	17	27%	26	19%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Roster design	Always when required	16	70%	19	90%	12	63%	33	53%	85	62%
	Mostly when required	3	13%	1	5%	5	26%	8	13%	18	13%
	Sometimes when required	0	0%	1	5%	1	5%	3	5%	7	5%
	Never	4	17%	0	0%	1	5%	18	29%	28	20%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Risk assessment to control overtime	Always when required	14	61%	19	90%	10	53%	28	45%	74	54%
	Mostly when required	6	26%	1	5%	6	32%	5	8%	21	15%
	Sometimes when required	0	0%	1	5%	1	5%	6	10%	10	7%
	Never	3	13%	0	0%	2	11%	23	37%	33	24%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Electronic monitoring devices for example smart cap	Always when required	5	22%	6	29%	6	32%	8	13%	26	19%
	Mostly when required	2	9%	0	0%	0	0%	1	2%	4	3%
	Sometimes when required	1	4%	3	14%	1	5%	3	5%	9	7%
	Never	15	65%	12	57%	12	63%	50	81%	99	72%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Q. Which of the following controls do you utilise for fatigue management at this site?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Electronic access and control cards	Always when required	6	26%	12	57%	8	42%	15	24%	42	30%
	Mostly when required	1	4%	0	0%	1	5%	1	2%	3	2%
	Sometimes when required	0	0%	2	10%	1	5%	2	3%	7	5%
	Never	16	70%	7	33%	9	47%	44	71%	86	62%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Training and education	Always when required	15	65%	17	81%	11	58%	31	50%	77	56%
	Mostly when required	5	22%	2	10%	5	26%	14	23%	29	21%
	Sometimes when required	1	4%	1	5%	3	16%	6	10%	15	11%
	Never	2	9%	1	5%	0	0%	11	18%	17	12%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Health surveillance	Always when required	8	35%	14	67%	10	53%	27	44%	62	45%
	Mostly when required	5	22%	1	5%	4	21%	10	16%	22	16%
	Sometimes when required	2	9%	5	24%	4	21%	6	10%	20	14%
	Never	8	35%	1	5%	1	5%	19	31%	34	25%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
MSAC fatigue guidance	Always when required	7	30%	14	67%	11	58%	16	26%	49	36%
	Mostly when required	3	13%	4	19%	1	5%	5	8%	15	11%
	Sometimes when required	5	22%	2	10%	4	21%	5	8%	17	12%
	Never	8	35%	1	5%	3	16%	36	58%	57	41%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Q. Which of the following controls do you utilise for fatigue management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Development of a fatigue management plan	Always when required	33	46%	13	57%	38	88%	125	56%	84	61%
	Mostly when required	10	14%	8	35%	1	2%	46	21%	19	14%
	Sometimes when required	6	8%	0	0%	3	7%	37	17%	9	7%
	Never	23	32%	2	9%	1	2%	16	7%	26	19%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Roster design	Always when required	31	43%	19	83%	35	81%	104	46%	85	62%
	Mostly when required	9	13%	4	17%	5	12%	52	23%	18	13%
	Sometimes when required	5	7%	0	0%	2	5%	35	16%	7	5%
	Never	27	38%	0	0%	1	2%	33	15%	28	20%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Risk assessment to control overtime	Always when required	29	40%	15	65%	30	70%	95	42%	74	54%
	Mostly when required	7	10%	4	17%	10	23%	43	19%	21	15%
	Sometimes when required	6	8%	3	13%	1	2%	48	21%	10	7%
	Never	30	42%	1	4%	2	5%	38	17%	33	24%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Electronic monitoring devices for example smart cap	Always when required	9	13%	4	17%	13	30%	13	6%	26	19%
	Mostly when required	1	1%	1	4%	2	5%	15	7%	4	3%
	Sometimes when required	2	3%	2	9%	5	12%	18	8%	9	7%
	Never	60	83%	16	70%	23	53%	178	79%	99	72%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Q. Which of the following controls do you utilise for fatigue management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Electronic access and control cards	Always when required	11	15%	9	39%	22	51%	58	26%	42	30%
	Mostly when required	1	1%	1	4%	1	2%	7	3%	3	2%
	Sometimes when required	2	3%	1	4%	4	9%	23	10%	7	5%
	Never	58	81%	12	52%	16	37%	136	61%	86	62%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Training and education	Always when required	34	47%	15	65%	28	65%	116	52%	77	56%
	Mostly when required	11	15%	6	26%	12	28%	62	28%	29	21%
	Sometimes when required	10	14%	2	9%	3	7%	36	16%	15	11%
	Never	17	24%	0	0%	0	0%	10	4%	17	12%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Health surveillance	Always when required	25	35%	13	57%	24	56%	76	34%	62	45%
	Mostly when required	9	13%	4	17%	9	21%	72	32%	22	16%
	Sometimes when required	9	13%	5	22%	6	14%	51	23%	20	14%
	Never	29	40%	1	4%	4	9%	25	11%	34	25%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
MSAC fatigue guidance	Always when required	17	24%	8	35%	24	56%	58	26%	49	36%
	Mostly when required	4	6%	5	22%	6	14%	71	32%	15	11%
	Sometimes when required	6	8%	3	13%	8	19%	52	23%	17	12%
	Never	45	63%	7	30%	5	12%	43	19%	57	41%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Other Measures For Fatigue Management

Q. Do you utilise any other measures at your site for fatigue management? If yes, please specify.

Fatigue management checklist and management approval for overtime	5
Managing hours	4
Self or Peer Monitoring	4
Supervisor-Employee interaction	3
Faid software assessment tool	2
Pre-planned rest breaks	2
Contractor log in management	1
Employee survey	1
Fitness for work assessment	1
Heavy vehicle maintenance scheme	1
Log tracker	1
Manage retrospectively with fingerprint clocking in and off and is reviewed	1
Operator fatigue protection-optic sensors that monitor eye movement	1
RTA Fatigue management guidelines for drivers	1
Statistic reports	1
Visual assessment	1

Q. Which of the following controls do you utilise for dust management at this site?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reducing emissions	Always when required	14	61%	17	81%	14	74%	43	69%	96	70%
	Mostly when required	6	26%	1	5%	5	26%	8	13%	22	16%
	Sometimes when required	2	9%	2	10%	0	0%	2	3%	7	5%
	Never	1	4%	1	5%	0	0%	9	15%	13	9%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Personal protective equipment	Always when required	22	96%	18	86%	16	84%	56	90%	123	89%
	Mostly when required	1	4%	1	5%	2	11%	1	2%	7	5%
	Sometimes when required	0	0%	1	5%	1	5%	0	0%	2	1%
	Never	0	0%	1	5%	0	0%	5	8%	6	4%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Administrative controls – reducing workers' time of exposure	Always when required	12	52%	14	67%	9	47%	30	48%	69	50%
	Mostly when required	4	17%	3	14%	8	42%	13	21%	34	25%
	Sometimes when required	6	26%	3	14%	2	11%	7	11%	18	13%
	Never	1	4%	1	5%	0	0%	12	19%	17	12%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Q. Which of the following controls do you utilise for dust management at this site?

Correlations by sector		Metalliferous		Open cut coal		Underground coal		Extractive		Overall	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Ventilation	Always when required	18	78%	14	67%	14	74%	46	74%	97	70%
	Mostly when required	3	13%	3	14%	4	21%	5	8%	18	13%
	Sometimes when required	0	0%	1	5%	0	0%	1	2%	2	1%
	Never	2	9%	3	14%	1	5%	10	16%	21	15%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Dust monitoring	Always when required	15	65%	19	90%	16	84%	37	60%	92	67%
	Mostly when required	1	4%	0	0%	3	16%	7	11%	12	9%
	Sometimes when required	4	17%	1	5%	0	0%	4	6%	10	7%
	Never	3	13%	1	5%	0	0%	14	23%	24	17%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%
Health surveillance	Always when required	13	57%	16	76%	15	79%	39	63%	88	64%
	Mostly when required	4	17%	1	5%	3	16%	6	10%	17	12%
	Sometimes when required	4	17%	2	10%	1	5%	6	10%	13	9%
	Never	2	9%	2	10%	0	0%	11	18%	20	14%
	Total	23	100%	21	100%	19	100%	62	100%	138	100%

Q. Which of the following controls do you utilise for dust management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Reducing emissions	Always when required	48	67%	17	74%	31	72%	138	62%	96	70%
	Mostly when required	8	11%	6	26%	8	19%	54	24%	22	16%
	Sometimes when required	4	6%	0	0%	3	7%	23	10%	7	5%
	Never	12	17%	0	0%	1	2%	9	4%	13	9%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Personal protective equipment	Always when required	65	90%	20	87%	38	88%	184	82%	123	89%
	Mostly when required	3	4%	1	4%	3	7%	23	10%	7	5%
	Sometimes when required	0	0%	1	4%	1	2%	12	5%	2	1%
	Never	4	6%	1	4%	1	2%	5	2%	6	4%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Administrative controls – reducing workers' time of exposure	Always when required	35	49%	14	61%	20	47%	106	47%	69	50%
	Mostly when required	17	24%	4	17%	13	30%	53	24%	34	25%
	Sometimes when required	5	7%	4	17%	9	21%	39	17%	18	13%
	Never	15	21%	1	4%	1	2%	26	12%	17	12%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Q. Which of the following controls do you utilise for dust management at this site?

Correlations by sector		0 to 20		21 to 99		100 or more		2011		2013	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Ventilation	Always when required	50	69%	16	70%	31	72%	126	56%	97	70%
	Mostly when required	7	10%	5	22%	6	14%	44	20%	18	13%
	Sometimes when required	0	0%	1	4%	1	2%	22	10%	2	1%
	Never	15	21%	1	4%	5	12%	32	14%	21	15%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Dust monitoring	Always when required	37	51%	21	91%	34	79%	146	65%	92	67%
	Mostly when required	7	10%	1	4%	4	9%	41	18%	12	9%
	Sometimes when required	6	8%	1	4%	3	7%	25	11%	10	7%
	Never	22	31%	0	0%	2	5%	12	5%	24	17%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%
Health surveillance	Always when required	40	56%	18	78%	30	70%	112	50%	88	64%
	Mostly when required	9	13%	2	9%	6	14%	56	25%	17	12%
	Sometimes when required	6	8%	3	13%	4	9%	41	18%	13	9%
	Never	17	24%	0	0%	3	7%	15	7%	20	14%
	Total	72	100%	23	100%	43	100%	224	100%	138	100%

Q. Do you utilise any other measures at your site for dust management? If yes, please specify.

Water carts	15	Mechanical dust extraction system	1
Dust suppression techniques	12	Mist sprayers on conveyers	1
Water trucks to reduce dust on roads/areas	6	No go zones around dust creating machinery	1
Spray bars fitted to crushing machinery	3	Personal occupational dust monitors	1
Weather monitoring	3	Personell dust monitoring	1
Area monitoring	2	Real-time dust monitoring cameras	1
Continuous mining machines utilising dust scrubber technology	2	Reporting process from employees	1
Education and awareness	2	Road sprays	1
Cleaning regimes	1	Suppression dust spray	1
Coal services dust sampling	1	Use of wet dust pro on roads	1
Hazard reporting	1	Vehicle washes prior to maintenance	1
In line dust suppressent in long wall	1	Visual monitoring	1
Irrigation system	1	Water filtration system	1
Live data	1	Wet material process	1

micromex research

The logo features the word "micromex" in a bold, black, lowercase sans-serif font. A stylized compass rose is superimposed over the letter "o". The compass rose has a white center with black lines extending outwards. The top point of the compass is a red triangle, and the bottom point is a black triangle. The word "research" is positioned below "micromex" in a smaller, grey, lowercase sans-serif font.

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