An exploration of the current effectiveness of worker engagement practices in the quarry industry

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Research Report

An exploration of the current effectiveness of worker engagement practices in the quarry industry

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This study was instigated by the Quarries National Joint Advisory Committee (QNJAC) on the basis that worker engagement practices were not perceived as widespread within the quarry industry. Thus, the present qualitative study explored how worker engagement in quarries is achieved and what makes it more challenging.

Worker engagement is about going beyond workers' consultation. Workers and their representatives need to be involved in decisions in order for them to be committed to health and safety (H&S).

Findings suggest that a great deal of effort is made to engage quarries' workers in H&S. Management commitment to H&S plays a key role in workers' engagement. However, management visibility on site needs to occur more often to create or sustain workers' engagement. A variety of communication methods proved to be essential to engage workers in multiple ways and on a continuous basis but H&S messages need to be relevant to their audiences, and proportionate in quantity. Worker attitude to H&S has improved although resistance from some groups still persists. Safety representatives play an important role in increasing attention to H&S although their role could be better exploited in some workplaces and their training courses being better implemented.

HSE Books

KEY MESSAGES

- Quarries visited as part of this research are working hard to engage employees in health and safety as evidenced by the variety and the use of written and verbal communication methods, managers' demonstrable commitment to health and safety and the improving workforce attitude to health and safety.

- Demonstrable senior management commitment is vital to worker engagement. On the whole, quarry managers appear to be doing this well with their claims supported by the workforce. However, ensuring adequate visibility on site to aid communication and build relations with workers is a recurrent challenge. Managers need to ensure good communication, think through reactions and actions, and justify their decisions to workers as far as practical. Empowering workers and ensuring effective decisions are taken is a balancing act.

- Communicating beyond the immediate team to prevent silo working should be addressed together with improving communications between transient groups and the ability to share best practice. Although relationships between employees within teams are good this might enhance working relationships across all employees. Ensuring the relevancy of the message is also important as is ensuring employees are not overloaded with information.

- Workforce attitude to health and safety is a significant enabler for worker engagement and is reported to have much improved across quarries in recent years. However, the difficulties in bringing about attitude change still remain.

- The safety voice, i.e. speaking up about safety concerns, was apparent in the participating quarries. Workers were empowered to raise issues, report accidents and near misses and take decisions about equipment choice suggesting good practice in this area.

- Workers were consulted and involved in developing risk assessments and procedures to varying levels across all four quarries. There was recognition of a lack of worker competence in this area (and need for improvement) but systems were in place to ensure workers were informed of the risks and controls.

- Senior management expressed a preference for partnership working with HSE to offer support and advice. Keeping Internet resources up to date was felt vital as was the opportunity to share knowledge across industry.

- Most quarries made use of the safety representative role and generally representatives were intrinsically motivated to maintain their position. However, concern was expressed over the practical value of this role as more workers feel empowered to raise issues directly, i.e. not necessarily via the safety representative. There were concerns about how some managers responded when concerns or incidents where brought to their attention.

- Uptake for the four day TUC-led course for safety representatives was poor. Participants' concerns related to the length of the course and mis-match between the audiences's preferred learning style and mode of delivery. The TUC badge was not considered a problem. Uptake of the one day MPQC course was also poor. Of those who were aware of it, concerns related primarily to the cost of the course.

EXECUTIVE SUMMARY

Background and research aims

In recent years, the Health and Safety Executive (HSE), with the support of the Quarries National Joint Advisory Committee (QNJAC) have focused on improving the health and safety performance of the quarry industry, concentrating specifically on developing effective workforce engagement practices and designing training courses to encourage workers to become safety representatives.

HSE, with the support of QNJAC, commissioned the Health and Safety Laboratory (HSL) to undertake qualitative research (using semi-structured interviews and focus groups) with four quarries to explore the mechanisms and effectiveness of workforce engagement within the quarry industry. Key research questions sought to identify:

- the current worker engagement practices in quarries,
- key barriers and facilitators to effective worker engagement,
- the mechanisms of management commitment to improving health and safety,
- the factors facilitating workers to take on the role of safety representative, and
- industry perception of the two training courses targeted at safety representatives: the one day Mineral Products Qualification Council (MPQC) course and the four day TUC-led course.

Quarries were selected based on their organisational size and material quarried. Data was analysed using a thematic approach suitable for identifying any similarities and differences between groups.

Main findings

- Senior managers showed a good understanding of the term worker engagement.
- Quarries engaged in a variety of written and verbal communication/consultation methods to ensure two-way communication and discussion between workers and managers. The key difference was the formality and number of the methods used, with smaller quarries adopting more informal methods compared to larger ones. The need for a variety of methods was recognised.
- Senior managers demonstrated their commitment to health and safety by undertaking site visits, role modelling good behaviours, showing a positive attitude to health and safety, giving feedback, empowering workers, being seen to take action, and offering physical and social support. Ensuring adequate visibility was of concern and some workers thought there was a tendency to react to situations without fully thinking them through. However, on the whole, workers supported the view that senior managers demonstrated good commitment to health and safety. Challenging senior management in larger quarries was more of an issue than in smaller quarries, which may also be a function of the level of visibility of senior managers.
- Workers showed concern that senior managers still put a price on safety, at times fail to listen to concerns, and demonstrate inconsistencies between words and actions.
- Communication appeared more difficult amongst transient and dispersed groups, with silo working and the opportunity to share best practice also being a problem. Generally, good working relationships exist between team members due to the close knit working, small operational teams and low turnover of staff. Relevancy of the message was also considered a barrier, together with the potential to give too much health and safety information in one go.

- Workforce attitude to health and safety appeared to be positive and much improved in recent years although negative workforce attitudes remain a barrier to engagement for some.
- Workers felt able to report near misses and accidents, raise issues with management and supervisors and make decisions about equipment choice. Lack of feedback was recognised as a concern when raising issues but was better following accident reporting. This was recognised by quarries. Various systems were in place for workers to report near misses.
- Workers were involved in developing risk assessments and procedures although the extent of this involvement varied. Some workers were involved in development from the start whereas others were consulted and informed of the risks and associated controls. There was recognition of a lack of worker competence in this area and the importance of involving workers.
- The use and effectiveness of reward schemes for health and safety was variable, especially the use of team level rewards. An individual's performance (internal team member or external contractor) may prevent the whole team from obtaining the reward and this may create resentment. This mechanism for engagement should be used with care considering the local situation and team concerned.
- Senior managers tap into a wide variety of support to assist them with health and safety, such as colleagues and Internet-based sources.
- Most quarries used a safety representative apart from the smallest of the quarries who operated in such small working teams that the role was not considered necessary. Although no formal incentives were in place to encourage workers to take on the role, they were given time and training to undertake the role. Most safety representatives were intrinsically motivated to maintain their role.
- There was concern about the relevance of the safety representative role in the future as more workers now feel empowered to raise issues themselves.
- A lack of communication about the content of union-based training courses and an unwillingness to allow non-union members into union-led health and safety meetings existed, particularly in large quarries.
- Uptake of the four day TUC course for safety representatives was poor. Only one quarry used the course as part of their regular safety representative training and offered mixed opinions of its use. Of those who were aware of the TUC course, concerns related to the length of the course and mis-match between the audience's preferred learning style and mode of delivery.
- Uptake of the one day MPQC course was also poor. Of those who were aware of it concerns related primarily to the cost of the course.

Issues for consideration
- Management should ensure that they are regularly visible on site, engaging in proactive, two-way discussions about health and safety with the workforce.
- Management should ensure that they take the time to undertake a comprehensive investigation of incidents that occur. This process should be visible to the workforce so that they can see that actions have been fully thought through and are evidence based. They should provide the workforce with full justification for any decisions taken.
- Where possible workers should be empowered to take health and safety decisions whilst also having access to support when making more complex decisions.
- Strategies to improve communications between management and transient and disperse groups are needed as well as strategies to ensure communication between teams is possible. This will help to address problems of silo working.

Ensuring management do not provide too much information and ensuring the message is relevant to prevent disengaging workers would also be beneficial.

- Training on effective risk communication and personal susceptibility techniques may help address the negative attitudes of some workers about health and safety.
- Attention should be given to reporting systems to ensure that timely and effective feedback is given to workers following any issues raised.
- An assessment of training needs for workers to ensure competence and therefore full involvement in developing risk assessments and procedures may be beneficial.
- Some senior management would like a drive on partnership working with HSE to offer more informal advice and support on improving health and safety as well as the opportunity to get involved in more knowledge sharing opportunities with industry.
- Management and Trades Unions should discuss ways to ensure that safety representatives role is used to maximum effect in different workplaces.
- Continued discussions are needed between trade unions and quarries to help address communication and relational problems between all parties.
- A review of the two training courses[1] is required to address the barriers to their uptake, such as the cost of courses, course length, content and mode of delivery.

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[1] *These refer to the one-day training course delivered through the Mineral Products Qualification Council and the 5 day TUC-run training course.*

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1. INTRODUCTION

1.1   BACKGROUND

For more than a decade the quarry industry has seen steady improvements in health and safety performance. The HSE and Quarries National Joint Advisory Committee (QNJAC)[2] have been particularly active over the years in consistently supporting the industry to achieve better outcomes. Initiatives are thought to have helped reduce accidents in quarries by over 80% since 2000[3]. However, quarrying remains one of the most dangerous industries to work in. Since 2000 over 3250 workers have suffered an injury reportable to HSE, 27 of those being fatal[4].

Although not formally evaluated, QNJAC's concern is that effective workforce engagement practices are not as widespread or integrated as they should be, despite the support from major employers and trade unions. According to HSE and QNJAC, bespoke training modules, designed to encourage workers to become safety representatives, have also had disappointing levels of take up.

As part of a 3-5 year programme, the HSE Workforce and Leadership (WaLT) policy team, supported by QNJAC, commissioned qualitative research to determine the current position regarding workforce engagement within the quarry industry and identify barriers to effective engagement and the reasons for them.

Defining worker engagement

It is important to clarify the term worker engagement as it can have many interpretations. In this research, the worker engagement definition includes aspects of consultation, involvement and engagement.

Legally, all employers must consult with their employees on matters relating to their health and safety[5]. Whilst no legal definition exists for the term **worker consultation**, the Health and Safety Commission (HSC) guidance states that:

> *"Consultation involves employers not only giving information to employees but also listening to and taking account of what employees say before they make any health and safety decisions.*
>
> *If a decision involving work equipment, processes or organisation could affect the health and safety of employees, the employer must allow time to give the employees or their representative's information about what is proposed. The employer must also give the employees or their representatives the chance to express their views. Then the employer must take account of these views before they reach a decision." (HSC, 2002[6])*

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[2] *The Quarries National Joint Advisory Committee (QNJAC) membership is drawn from HSE, relevant trade associations, trade union and professional bodies. Its aim is to promote health and safety in all sectors of the quarrying and associated industries and raise health and safety concerns. HSE website accessed 27.1.14*

[3] *HSE website http://www.hse.gov.uk/quarries/index.htm – accessed 28.1.14*

[4] *HSE website http://www.hse.gov.uk/quarries/index.htm – accessed 28.1.14*

[5] *Safety Representatives and Safety Committee Regulations 1977 (SRSCR 77) and the Health and Safety Consultation with Employees Regulations 1996 (HSCER 96).*

[6] *Lunt, J., Bates, S., Bennett, V. and Hopkinson, J. (2008). Behaviour change and worker engagement practices within the construction sector. HSE research report 660.*

This definition details the minimum requirement for two-way communication between employers and employees (or their representatives) concerning health and safety management. The concept of **worker involvement** appears to go a step further, suggesting a more comprehensive two-way process where employer and employee:

- talk to one another,
- listen to one another's concerns,
- raise concerns and solve problems together,
- seek and share views and information,
- discuss issues in good time,
- consider what everyone has to say, and
- make decisions together[7].

Whilst integrating the above constructs, **worker engagement** implies that engagement is taking place when employees' actions are linked with the goals and values of the organisation. Business Innovation and Skills literature[8] describes engagement as:

"…*a workplace approach designed to ensure that employees are committed to their organisation's goals and values, motivated to contribute to organisational success, and are able at the same time to enhance their own sense of well-being.*"

When worker engagement has been used in the area of health and safety as in the Step Change in Safety (2012)[9] programme, the notions of active and collective participation as well as opportunity to challenge health and safety management are emphasized:

"the active participation of everyone in the workplace in managing and improving safety performance. When engaged workers feel as able as managers to improve safety where they work. Workforce engagement therefore means that all workers participate in and challenge how safety is managed where they work".

Why improve worker engagement?

Worker engagement leads to a range of positive outcomes (customer satisfaction, productivity, lower staff turnover, and lower accident rates at business unit level) as found in a meta-analysis of 1,490 business units[10][11].

As shown in research, worker engagement may be part of or determined by a positive safety culture. Five indicators of a positive safety culture have been identified in a review of literature on safety culture and safety climate[12]: leadership, two-way communication, employee involvement, learning culture and attitude towards blame. This suggests that by focusing on improving employee/worker involvement, an organisation will also work towards developing a positive health and safety culture. The Health and Safety commission defines safety culture as:

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[7] *HSE website, accessed 19.07.2013*

[8] *MacLeod, D. and Clarke, N. (2009). Engaging for Success: enhancing performance through employee engagement. A report to government, Department for Business, Innovation and Skills at http://www.bis.gov.uk/files/file52215.pdf*

[9] *Step Change in Safety, 2012. Workforce Engagement: A practical guide.*

[10] *Harter, J.K., Schmidt, F.L. and Hayes, T.L. (2002). Business-unit-level relationships between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. Journal of Applied Psychology, 87, 268-279.*

[11] *Note: Safety data (on accidents) were available in 15 studies reviewed and 1490 business units.*

[12] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*

"the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management.

Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures" (HSC, 1993[13]).

As Fleming notes, organisations with a more evolved safety culture engage all staff to improve safety (2001)[14]. Organisations striving to achieve a positive health and safety culture should therefore ensure that worker engagement and genuine consultation is part and parcel of daily working life.

1.2   RESEARCH AIM

This research was commissioned by the Health and Safety Executive (HSE) to explore the current effectiveness of workforce engagement within the quarry industry, to help inform future HSE and QNJAC actions.

1.2.1   Research questions

This research project therefore sought to answer the following research questions organised under key topic areas:

1. Consultation: What does current workforce engagement look like within quarries?

a)   What good and poor practices can be identified?

b)   Are workers consulted about significant changes in the workplace? Are their views sought in advance of commissioning new plant or machinery that they will be required to operate?

c)   Are views of workers on health and safety issues heard and responded to? How?

2. Barriers and facilitators: What factors or mechanisms hinder and facilitate workforce engagement in health and safety? (Why do some workers engage and others do not?)

a)   What factors facilitate workers to take on the role of Safety Representatives (SR) or Representatives of Employee Safety (RES) in non-TU workplaces?

b)   How committed are senior managers to health and safety and what evidence can be provided to demonstrate this?

c)   How is the 'safety voice' viewed by workers? (E.g. ability and opportunity for workers to report near misses or things that are viewed by them as unsafe without being blamed)?

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[13] *HSC, (1993) as cited in Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*
[14] *Lunt, J., Bennett, V., Hopkinson, J., Holroyd, J., Wilde, E., Bates, S., and Bell, N. (2009). Development of the People first Toolkit for Construction Small and Medium Sized Enterprises. HSL report.*

3. Promotion: The four day training course for workers' representatives is TUC run. How effective has this been in encouraging take-up? How effective has the training been?

a) What is the perception of employers/managers of the TUC training course? Is the TUC 'badging' a barrier to/facilitator of promotion of the training to their workers in the eyes of some employers/managers?

b) What is the perception of employers/managers of the one day training course supported by QNJAC and delivered through the Mineral Products Qualification Council?

4. Improvements: How could workforce engagement be improved?

2. METHODOLOGY

2.1 RESEARCH DESIGN

A qualitative method approach was used and included semi-structured interviews and focus groups. Qualitative, semi-structured methodology allowed information to be gathered from the perspective of the interviewee and gave an understanding as to how and why they had that particular perspective. This methodology allowed a great deal of in-depth information to be gathered relating to a particular topic. Interviews and focus groups were conducted face-to-face at the participants' place of work.

2.2 SAMPLE AND RECRUITMENT

29 participants took part in the study. A purposive sample of 4 quarries (one major multi-national, one large SME[15], one small SME and one small independent[16]) was initially recruited by HSE via the QNJAC. The QNJAC sought to include as many of the 4 main quarry types as possible, including hard rock, sand and gravel, clay, and coal.

Contacts were provided by HSE to the HSL research team. HSL then formally invited quarries to participate in the research project via email and arranged a suitable date/time to visit the premises to collect data.

The table below outlines the persons interviewed at each of the four quarries along with the type of quarry. The total sample comprised:

Table 1 Outline of sample

Quarry type	Quarry size	Workforce sample	Management sample	H&S representation
Limestone and Powders	Large multi-national	1 focus group with 5 employees	1 x interview with senior manager 1 x interview with line manager	1 x interview
Clay	Large SME	1 x focus group with 5 employees and contractors	1 x interview with senior manager 1 x interview with line manager	1 x interview 1 x telephone interview (completed post visit)
Calcium carbonates	Small SME	1 x focus group with 6 employees	1 x interview with senior manager 1 x interview with line manager	1 x interview
Sand and Gravel	Small independent	1 x interview with employee	1 x interview with senior manager 1 x interview with line manager	N/A
Sub totals		**17**	**8**	**4**
Total sample	**29**			

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[15] Small to medium sized enterprise
[16] Small Independent Quarry is defined as a 'family run business' or owner-operator business. A small SME is defined as a not a major quarry.

2.3   DATA COLLECTION

All interviews and focus groups lasted up to one hour and were digitally recorded and transcribed in preparation for analysis. Written consent was obtained from all participants (see Appendix one).

The interviews and focus groups followed a semi-structured set of questions developed by HSL in conjunction with the customer and the HSE's Behavioural Social Science Unit. Different topic guides were developed for each of the four participant groups and can be found in Appendix two.

All interviewers were briefed on the use of the question schedule to ensure that questions were interpreted in the same way by each interviewer/facilitator and any issues of ambiguity and/or misunderstanding were addressed. This helped to ensure reliability across the interviews and focus groups.

2.4   DATA ANALYSIS

Interviews and focus groups were analysed using a thematic approach which is a method for identifying, analysing and reporting patterns (themes) within data. It organises and describes the data set in (rich) detail and is also used to interpret various aspects of the research topics (Boyatzis, 1998[17]). For this reason, thematic analysis was considered a suitable method to adopt to gain an in depth understanding of workers' and managers' views of worker engagement in the industry and any differences and similarities between the groups.

A process of quality control called *inter-rater reliability* (Greenhalgh and Taylor, 1997[18]) was applied to the data to ensure a valid analysis of the findings. This was done by having the codes and themes extracted from the same data set and having a subset of this analysis checked by a second researcher.

Overarching themes were generated using mainly a bottom up driven approach, i.e. extracting meaning and richness of the data from the participants' accounts in combination with the objectives of the research.

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[17] *Boyatzis (1998), as cited in Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3: 77-101.*

[18] *Greenhalgh, T., and Taylor, R. (1997). How to read a paper: Papers that go beyond numbers (qualitative research). British Medical Journal, 315, 740-743.*

3. FINDINGS

This chapter presents a description and analysis of the opinions and experiences of participants across the quarries. Where there are noticeable differences of opinion between job roles and quarries, these are noted in the text. Quotations from participants are used to illustrate the analysis presented.

3.1 UNDERSTANDING WORKER ENGAGEMENT

Management were asked what they understood by the term worker engagement. This was not to test their knowledge but rather to identify how their understanding may lead to practices in the field. This is crucial. Managers' interpretation may have an impact on the systems needed to fully engage with their workers and align the workforce to the organisation's goals and values.

The notions of involvement of the workforce in all aspects of safety, mutual trust between management and employees, communication, dealing with concerns and speaking openly were mentioned by senior managers. Expressions included:
- Involving the workforce in all aspects of safety
- Incorporating safety into everything that is done
- Mutual trust between management and the workforce so that the workforce can work without supervision
- Talking to one another
- Looking out for one another so that working safely occurs without thinking
- Ensuring the workforce are part of what is achieved
- Dealing with workforce health and safety concerns
- Formal and informal mechanisms where everyone can speak openly

Referring back to the definitions outlined in the introduction, managers clearly understand that worker engagement involves consulting workers and having physical systems in place to ensure workforce views are heard and two-way communication can take place. They go further in recognising that engagement should also focus on the relationship that exists between management and the workforce. The concepts of mutual trust and possessing an 'actively caring attitude' are evident within their definitions. Some managers even recognised that engagement should ensure that health and safety forms an integral part of day-to-day working life.

"what I'm striving for is for everybody… to feel part of the process of making the place a safer place...and to be looking after each other, looking after their own safety so that without even thinking about it they work safely"

3.2 WAYS OF ENGAGING THE WORKFORCE

Various methods were used to help engage the workforce and management in health and safety. The methods detailed below were highlighted by participants.

3.2.1 Consultation / communication

The following written and verbal communication methods enabled workforce engagement. Use of these methods has been highlighted in previous research as a

way of demonstrating management commitment to safety[19]. According to the research, "*The objective of communication is to relay to employees the clearest possible message of safety goals and objectives, and transfer important health and safety information. This plays an important part in helping employees to understand the direction of their company, its future and how they form part of the future*".

Written communication methods

Some consistent written communication methods were employed by all quarries regardless of size. They were both top down and bottom up, and were actively used to provide the opportunity for sharing knowledge and information between the workforce and management. These included:

- Notice boards: These were used to display relevant posters, leaflets, health and safety messages, emails, minutes/actions from health and safety meetings, outcomes of accidents, first aid, and near misses. Boards were updated by supervisors or administrators who relayed the information verbally to the workforce to raise their awareness to any changes. Notice boards helped aid consistency between sites and ensure access of information to all. One quarry had concerns that changes to the boards go un-communicated.

- Near miss reporting systems: Systems included a box with cards completed by workers (anonymised if preferred) or reporting directly to supervisors/management. Recording took place via, for example, a database or book. Root cause analysis/investigation was carried out as appropriate, actions were closed out by supervisors/managers and feedback was given verbally and in writing. However, one line manager was unsure if feedback was given.

- Daily checklists/worksheets: Workers used these to complete daily health and safety checks of machinery, equipment and visitors on site. Checks undertaken were signed off by supervisors and problems reported were appropriately actioned.

- Leaflets/email bulletins: This form of communication included leaflets about risks and emails from senior management and/or HSE. Larger quarries often filtered the bulletins to ensure relevancy to the workforce. One small quarry reported that the content of any leaflet was discussed between supervisor and worker to ensure understanding of the content.

- Minutes from health and safety meetings: Formal health and safety meetings were not considered necessary by the very small quarries due to the small teams. One senior manager noted that reviewing the minutes helped identify trends/issues that might be best dealt with at the global level rather than just the local level.

Further written communication methods pertinent to specific quarries included:

- Quarterly newsletters: Used by one quarry, these included relevant work-related health and safety issues. The aim was to extend the coverage of the newsletter to include home-related issues.

- Notes added to wage slips: One quarry used this form of communication. It was well-received in that it detailed changes in health and safety and near misses but

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[19] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*

there was also concern that too many notes may be counter-intuitive and discourage workers from reading them.

- Electronic storage of health and safety information to ensure better visibility and access of health and safety information by workers and supervisors whilst on site, including health and safety messages: This database, used in one quarry in particular, ensured that information stored was anonymised to protect worker identity and tailored to specific sites across the quarry.

- Changing attitudes towards safety (CATS) scheme: This was currently underway in one quarry and provided a source of written health and safety information.

Verbal communication methods

Across all quarries there were more verbal communication methods employed than written. Communication methods were more corporately led and formalised (such as campaigns and safety days) in the larger quarries. As could be expected there were also more formal verbal communication methods (e.g. regular meetings) used in larger quarries compared to the very small quarries. Small quarries used informal communication methods due to the very small working teams and the senior manager's ability to communicate daily with the workers/supervisors face to face about health and safety. The ability to communicate daily has also been identified as beneficial in developing a positive health and safety culture[20].

Verbal communication methods included:

- Health and safety meetings: These were generally used across quarries and included the following:

  Safety committee meetings were held on a monthly to bimonthly basis. Attendees included safety representatives, lower level management, and in one quarry the senior manager chaired the meeting. The safety representatives raised workforce issues and recent incidents were discussed. Minutes from these meetings were typically cascaded to the workforce.

  One quarry used **daily team meetings** to discuss operations on site, review near misses and shift handover issues as well as weekly safety briefings which were run by the workshop supervisor. These meetings were perceived by safety representatives as disengaging workers as they were not considered relevant to their jobs, focusing more on industry-wide issues. Minutes were taken and cascaded for all to see. Another quarry ran a similar meeting, chaired by the senior manager, for higher level management also to discuss industry-wide issues. It is important therefore to consider the relevancy of the message ensuring it is tailored to the audience as appropriate. Other quarries used daily team meetings but recognised that this was easier if the teams were located together. Dispersed teams preferred to communicate via the safety representative. One quarry only operated a daily team meeting if the task to be undertaken was considered 'out of the ordinary'.

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[20] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.*

Two quarries ran **quarterly meetings**, one specifically for safety representatives, the other with a range of employees, contractors and managers. The aim was to raise any pertinent health and safety issues. Minutes were cascaded accordingly.

The same quarry also held meetings with **specific working groups** to build better working relationships between the team and management.

Finally, one quarry held a **biannual supervisors meeting** to allow management across the company to give a business and health and safety review. The quarry manager was tasked with cascading the outcomes of the meeting to all.

One quarry however, had no formal health and safety meetings in place and no over-arching organisational meeting for all workers across the sites to meet. Formal meetings were not considered necessary as workers operated in very small teams and therefore communicated continuously with one another. There was no formal briefing at the start of each day. Issues were discussed informally and actioned. The senior manager was also on site daily to converse with all members of the team and dealt with any health and safety concerns.

- Toolbox talks: These were considered an important tool for worker engagement. Typically they were delivered monthly and focused on relevant health and safety topics or near misses/accidents. Discussion and two way conversation occurred. Some toolbox talks were delivered by supervisors, whereas one quarry used an external trainer, considered by the workforce to be knowledgeable/expert, credible and trusted. These are vital elements of effective communication (Kreuter and McClure, 2004[21]). The trainer knew the organisation well and travelled round the site to deliver the toolbox talk to individuals and groups ensuring accurate delivery of the message to more workers. Workers were positive about toolbox talks, finding them interactive, humorous, engaging, relevant and suitably tailored. Management explained that use of an external trainer served to alleviate responsibility from the supervisor, whilst reinforcing the good behaviours instilled on site. Finally one quarry recognised the need for competent trainers (both in-house and external providers) and had stopped toolbox talks until the trainers had attended relevant training. The same quarry also pointed out that finding time to get all workers together on site often proved difficult.

- Safety days/safety campaigns: larger quarries used these as a method for engaging the workforce and raising their awareness/perceptions of risk. Campaigns were typically targeted according to injury frequency rates, trends in accidents, or topic areas. One campaign involved a focused programme of weekly sessions over an 8 week period involving videos, discussions and workshops. Informal site observations by management found that workers had remembered the key messages. Safety days occurred once or twice a year where workers were taken off site to receive training, demonstrations, presentations and updates on the business and health and safety. One large quarry also held safety seminars capturing a wide audience and focused on safety culture, made use of personal testimonies to convey risk and personal susceptibility and held safety stand-downs twice a year.

- Health and safety training: Training was recognised as a useful tool for worker engagement. Health and safety induction and refresher training was typically

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[21] Kreuter, M. and McClure, S (2004). The Role of culture in Health Communication, Annual Review of Public Health, 25: 439-455.

carried out. One safety representative noted that the induction training for their new workers could amount to £10-15,000 with workers trained with an experienced operator adopting a health and safety focus. Participants in one quarry outlined courses undertaken specifically by managers and safety representatives on incident investigation and reporting. One large quarry holds a three day safety university every two years involving a large number of workers across the industry. Workforce perceptions across the smaller quarries were that training courses helped to increase knowledge and provided practical advice. Attendance at any course was instructed by management. Some noted the lack of induction training for transient groups that operated on their site, e.g. lorry drivers. However, health and safety expectations were detailed to them by a manager upon arrival.

- Radio/phone communication: Radios and mobile phones were used to maintain communication. These were very useful to workers in dispersed teams; problems could be raised instantly and rectified. In the smaller quarries, workers also had the direct number for the senior manager.

- Audits: These were used as a means of engaging workers in conversation about health and safety matters. One small quarry employed external consultants to undertake six-monthly audits. Workers and managers in the quarry considered these audits useful to prevent complacency, identify and rectify issues and find out about other incidents across the quarry. Upon completion of a report, discussions were held between the line manager and worker to identify action to be taken. Larger quarries undertook audits in-house and focused on outstanding issues, near misses, and inspection of the work area or task. Different audits occurred at different intervals ranging from daily to fortnightly. Audits were carried out by senior management, safety representatives and quarry managers. Workers in one quarry were also required to assess/inspect their own work area which was then signed off by management. All participants considered that these audits aided consistency, fostered communication with workers, enabled safe behaviour to be praised, provided opportunity for workers to raise concerns, and encouraged workers to look out for one another. One quarry is looking to change their audits to focus more on human factors issues. Finally, another quarry employed the use of an external contractor to undertake behaviour-based safety audits with a focus on coaching workers.

- Management of contractors: One quarry ensured contractors were engaged with health and safety on site by undertaking a daily review of risk assessments and site rules with them, ensuring that they have appropriate insurance, outlining PPE requirements and sending them a contract to park.

- Temporary working groups: These were used by one quarry to help engage with specific groups about pertinent issues and agree action jointly. Decisions were then displayed on notice boards to seek feedback (and aid consultation) from a wider audience. The senior manager felt these had worked well to increase engagement and develop a positive working relationship.

- Occupational health: One quarry highlighted the use of the occupational health provider to ensure 1-1 advice to workers about relevant health issues.

Barriers to communication / consultation

Although identified as a key enabler, when ineffective or lacking, communication hindered workforce engagement. Barriers included the availability of workers, i.e. working around shift patterns and getting transient groups and contractors together. One safety representative noted the lack of opportunity for all workers to meet to share best practice and learn. Silo working was also a concern for some causing uncertainty over whether there was consistency of communication between the different quarry areas. One senior manager was also unsure how messages were cascaded. This highlights the importance of, and need for, two way communication systems, knowledge sharing opportunities and regular communication between teams.

A lack of IT facilities was also felt to hinder communication. One quarry was looking into ways in which this could be improved as they had found that using different methods had enabled engagement. A variety of communication methods are needed to help ensure the message is received and understood, e.g. the use of videos, discussion and personal testimonies could help to ensure different learning preferences are met. The relevance of the communication can also serve to disengage workers. Conversely, having an open communication system and communicating the relevance of the message during meetings helped engagement. One safety representative highlighted the importance of a balance between managers listening and giving workers relevant information.

There was recognition from some safety representatives and managers that giving too much health and safety information might serve to disengage workers. Finally, a big barrier for one particular quarry was consistent messaging with workers who were union members and those who were not. This was in part because non-union members were not allowed into health and safety meetings for union members.

Allowing workers the opportunity to get involved in the design of their work and work environment was considered an enabler to engagement.

3.2.2   Perceived management commitment to Health and safety

Organisational/management commitment to health and safety is a key component of a positive health and safety culture[22][23]. Managers were asked to provide examples of how they demonstrate their commitment to health and safety. There was consistency of opinion across all managers interviewed, who outlined various techniques used.

Managers spoke of the importance of their visibility on site although the extent to which managers could carry out walkabouts varied. Managers of the smaller quarries were out on site four-seven (i.e. daily) times per week, which was also noted by the workers. Conversely managers of the larger quarries, although more office-based, still managed to get out on site half a day or more per week, with their quarry managers on site more frequently.

"...it's a weekly/daily event now, you see them out"

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[22] *Lunt, J., Bennett, V., Hopkinson, J., Holroyd, J., Wilde, E., Bates, S., and Bell, N. (2009). Development of the People first Toolkit for Construction Small and Medium Sized Enterprises. HSL report.*

[23] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*

Some senior managers noted their intention to carry out more informal walkabouts to increase conversation and visibility. Previous research also found that an informal approach to discussing safety matters by senior management was more effective than formal visits[24]. Workers within the larger quarries however, had noted the lack of interaction from senior managers. Indeed some lower level managers highlighted that high workload prevented them from getting out on site resulting in a lack of visibility. A low perception of senior management visibility was also highlighted as a barrier to engagement by MacLeod and Clarke (2009), with visible leadership considered critical for engagement[25]. Poor visibility left workers with the perception that management were too busy to engage on matters of health and safety. Workers considered senior management visibility was an important facilitator to worker engagement.

Managers recognised the importance of role modelling good health and safety behaviours, leading by example and not walking past obvious unsafe acts, but dealing with them via discussion and coaching. Being seen to take action on health and safety issues raised was seen as important along with providing timely feedback.

> *"But the main one I do is actually really making sure I do what I say I'm doing…"*

Other key attitudes that managers spoke of included the importance of demonstrating an enthusiasm for health and safety, highlighting its importance and benefits, recognition that change should not be forced onto workers, the importance of open, transparent communication, and recognising the need for a just culture and consistency of approach. Indeed previous research highlighted that a leader who is unaware and disinterested in worker engagement can act as a barrier[26]. Workers supported this view, arguing for the importance of a manager who comes across with genuine enthusiasm and commitment to health and safety. Regarding open, transparent communication, previous research noted the importance of demonstrating commitment to health and safety through written forms of communication ensuring that the commitment is visible and credible to employees of all levels[27]

Treating the workforce with respect and knowing them well were also highlighted by management as enablers for worker engagement.

Providing sufficient resources, investment and support to the workforce was noted by managers and they spoke of the importance of attending health and safety meetings and carrying out audits/inspections regularly. Indeed, provision of a dedicated facility to help engagement (by way of a training room) was noted by safety representatives as a facilitator for worker engagement. As well as leading activities, managers also highlighted the importance of empowering the workforce to undertake health and safety activities, raise issues and take action. This shows that managers respect and trust the workforce as experts in their own jobs.

Overall, as indicated above, managers highlighted a range of competencies that any good health and safety manager should possess, focusing on behaviours, attitudes and skills. These positive competencies were further supported when the workforce were

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[24] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*
[25] *MacLeod, D. and Clarke, N. (2009). Engaging for Success: enhancing performance through employee engagement. A report to government, Department for Business, Innovation and Skills.*
[26] *MacLeod, D. and Clarke, N. (2009). Engaging for Success: enhancing performance through employee engagement. A report to government, Department for Business, Innovation and Skills.*
[27] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*

asked for their perceptions of management support. Although perceptions were mixed, there was a significant positive response from many workers as detailed below.

Workers, safety representatives and line managers felt that senior management demonstrated their commitment by supporting decisions to stop work, investing in health and safety, listening, consulting workers over equipment and procedural changes, providing the equipment requested, being visible and recognising good performance. Participants felt that senior managers had a positive attitude towards health and safety, by focusing on health as well as safety, raising its profile amongst the workforce and generally giving it a 'much needed boost'. Raising the profile of worker engagement and its benefits has also been highlighted as an enabler in other research[28]. Workers in one quarry noticed a significant shift in priority with health and safety now taking precedence. The example given was where night working had been reduced.

"They wouldn't say get it done at night, you know, when no-one's here."

"they don't think twice about stopping the plants or anything..." "You never get any backlash if you've…stopped a job and asked for a scaffold..."

"They ask you about everything"

Having an open door policy and providing prompt feedback were also noted by the workforce as important demonstrations of management commitment, which is also evidenced in other literature[29]. Other workers spoke of feeling 'looked after' by management, feeling informed about health and safety and feeling that they could challenge management if they were seen not following procedure. This implies that by physically demonstrating their commitment, managers had begun to alter the perceptions of the workforce impacting on workforce commitment.

Barriers to / concerns about management commitment

There was some concern that management (at all levels) were still seen to put a price on safety and refuse certain equipment on the grounds that it is too costly. Research has noted that the provision of adequate resources is a strong indicator of management commitment to safety[30]. On occasion some felt that their opinion had not been heard and that managers sometimes showed a lack of care and attention to workers' health and safety. One comment from one quarry raised a concern that senior management only show care and concern out of fear of liability. Inconsistency was noted as an example of poor management commitment, both inconsistencies between management's words and actions as well as inconsistent messages, with some feeling patronised by some messages whilst being left to make decisions about more risky activities alone.

Workers in larger quarries showed concern that the number of initiatives enforced at the corporate level can impact on the amount of health and safety messages received, potentially leading to 'too many messages on health and safety, if not managed

[28] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367 and MacLeod, D. and Clarke, N. (2009). Engaging for Success: enhancing performance through employee engagement. A report to government, Department for Business, Innovation and Skills.*
[29] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.*
[30] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. RR367.*

properly. Workforces feared becoming too multinational with a clear preference to remain as a family-oriented business. This highlights the importance of getting the balance right with health and safety: too much can serve to demotivate and disengage both workers and managers. In providing too much health and safety information, some workers felt that senior managers failed to recognise staff expertise and competence to make effective decisions. Workers and safety representatives considered that management sometimes overacted to incidents and regarded HSE guidance as legislation, both of which can lead to an increase in health and safety paperwork, unrealistic working practices and an increase in violations (e.g. workers overriding machinery). This evidence suggests that whilst there are clear improvements in recent years and good practice in management commitment to health and safety, more could be done to address some of the barriers and workforce concerns.

3.2.3   Building relationships

The ability to work as a close knit team and knowing those you work with well were highlighted by participants as key enablers for effective worker engagement. Many spoke of the low turnover of staff, small working groups and 'family' orientation as helpful for communication and engagement. The low turnover of staff enabled workers to get to know one another well, actively look out for each another and feel confident to challenge one another over health and safety if necessary.

Management also highlighted how important it is to know your team well if you are to effectively engage with them about health and safety. Some safety representatives felt that building relations with the workforce can be a challenge, due to the number of workers and for those with negative attitudes to health and safety, but is vital. It is important to know the individual to know how to approach/communicate with them.

The ability to build good working relationships and get to know teams from other parts of the quarry was noted as a concern by some due to silo working and transience.

It was perceived in one of the larger quarries that workers' inability to challenge senior management hindered engagement. Conversely a smaller quarry reported that they would happily challenge the senior manager. This may be a function of higher visibility of the senior manager and therefore an indication of an ability to build a closer working relationship where workers feel confident to challenge those in a more senior position. Indeed a manager in one large quarry noted that communication within smaller quarries must be easier due to the higher visibility of both workers and managers.

3.2.4   Workforce attitude/behaviours towards health and safety

Without a workforce with a motivated attitude towards health and safety, engagement will prove difficult, if not impossible. Research by Fleming and Lardner (1999) considered that employee involvement can make a positive difference to workforce attitudes towards safety[31]. All quarries had identified it as an enabler and barrier.

Worker attitude, although reportedly much improved in recent years across the quarries, remained a barrier to worker engagement. Participants reported that some

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[31] Fleming, M. and Larder, R. (1999). Safety culture – the way forward. The Chemical Engineer, pgs. 16-18

workers remain disengaged with health and safety, do not see it as their responsibility and possess an ingrained attitude that health and safety 'gets in the way of getting the job done'. Some were concerned that other workers see that there is too much health and safety, which at times can be stressful. However it was also pointed out that those same workers would happily apportion blame to management should something go wrong. This negative attitude was also noted to be bolstered in some organisations by worker tenure and age. The tendency to continue working in an unsafe manner because injury had not occurred was also noted.

One quarry manager explained how it can be difficult to discipline workers on health and safety issues, as this can impact negatively on management's ability to engage with the rest of the team.

Conversely, workers' 'actively caring' attitude towards one another was considered a big enabler of engagement with one quarry explaining that workers adhere to health and safety because it is the right thing to do. Indeed, educating and training workers about health and safety had helped to change worker attitude towards health and safety in one quarry.

The actively caring attitude was also evident elsewhere with workers considering that they would rather take a risk themselves than ask others to do the task. They perceived that as competent individuals they were not putting themselves at risk and could complete the task more quickly. However, this may highlight concerns of risk perception. Workers and managers in one quarry reported that the increase in worker engagement had served to raise worker awareness of the hazards.

3.2.5   The safety voice

Speaking up about safety concerns – or safety voice is a proactive response that may reduce future injuries by alerting others who have the chance to change or be heedful of dangerous work[32]. It is important that the workforce feel able to speak out, raise concerns and put forward their opinions about health and safety. This makes for an effective and empowered employee voice[33]. MacLeod and Clarke (2009) note that being heard reinforces a sense of belonging to an organisation and a belief that their actions can have an impact. The need to be able to feed information upwards was also identified as a key driver for engagement.

3.2.5.1   Raising issues

Aside from the systems in place to report accidents and near misses (detailed in section 4.2.6); workers could raise issues via their safety representative, line/quarry manager or directly to the senior manager. Senior managers widely reported having an open door policy and both workers and managers agreed that approaching the senior manager was becoming more common with issues promptly addressed. Managers reported that they also try to get out onto site as often as possible to converse with workers (detailed in section 4.2.2).

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[32] *Tucker and Turner, (2014) Safety Science, 2014 - http://dx.doi.org/10.1016/j.ssci.2013.10.011 Accessed on 20.2.2014.*
[33] *MacLeod, D. and Clarke, N. (2009). Engaging for Success: enhancing performance through employee engagement. A report to government, Department for Business, Innovation and Skills.*

Feedback on issues raised was often ad hoc and something that was recognised by all levels of management as an area for improvement. There was some concern that feedback on issues raised in one of the smaller quarries could be slow and that sometimes changes are dictated rather than consulted on. There was concern in other quarries that actions were not taken forward for cost reasons.

> *"So, like I say, they talk about safety and they're willing, they're not always that willing like, you know what I mean. His only explanation was I've no money."*

Workers in one quarry explained that management will name individuals involved in accidents and incidents, which workers considered unfavourable. This suggests that they may be reticent to raise future issues for fear of blame.

> *"They'll always name people if there's an accident…"*
> *"It doesn't come across well with the lads at all"*
> *"…they say there's a no blame culture but…"*

3.2.5.2   Choice over equipment selection

Workers were given choice over the Personal Protective Equipment (PPE) and other resources/equipment that they preferred although it was mentioned that choice may be given only when they failed the fit testing for dust masks.

One quarry was empowering workers to pilot different pieces of PPE before allowing them to select the one that was most appropriate for use. Workers found this positive. They recognised that management strive to find the best equipment possible within budgets available.

> *"We never struggle with PPE, do we at all?...there's PPE here 24 hours a day really."*

Workers on the smallest quarry reportedly felt empowered to deal with issues as they arose, such as organising for equipment to be fixed and only seeking senior management support when necessary. The senior manager involved them in decision making related to equipment choice, listened to their preferences and workers were encouraged to order what they needed. Indeed, research points to the importance of giving workers responsibility for their own and other's safety to increase their sense of involvement[34].

One large quarry operated the 5S[35] technique, a lean manufacturing technique to assist with workplace organisation to ensure that equipment is sufficient to do the task (i.e. equipment is standardised and can be sustained). Senior management considered that workers operating within this technique have a clear idea of what 'good practice' looks like. Use of this technique helped set clear expectations to workers and facilitated evidence-based discussions on relevant health and safety topics. Training on this was provided to all workers.

> *"…what you tend to find is that people then take ownership of that and they keep it clean and tidy themselves so you've already got that engagement using the 5S tool."*

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[34] *Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.*
[35] *NB: Participant was only able to recall that that two of the five S's stood for 'sorting' and 'standardising'.*

3.2.5.3 Accident and near miss reporting

Accident and near miss reporting is one of the key factors in safety culture and has been measured by the HSL Safety Climate Tool[36]. A positive safety culture needs a workforce to effectively report safety issues[37] and create a 'reporting culture'[38] where people are prepared to report accidents, near misses and safety concerns. Systems were in place in all quarries for workers to report accidents and near misses.

Although more formal systems operated in the larger quarries, workers in the very small quarry noted that due to smaller working teams, incidents were reported directly to senior management and dealt with promptly. Here, incidents were recorded in an accident book, with duplicates sent to the office.

All workers considered that feedback (both written and verbal) was given on the outcomes of incidents and subsequent action taken. The importance of this feedback was recognised. Research also supports the view that feedback is vital in ensuring a good safety culture (Human Engineering, 2005[39]). There was concern in one quarry that in giving feedback the individual involved is identified, leading to the perception of blame. This is something to be wary of where the health and safety culture is still in its early phase of development. In this case, anonymised reporting and feedback may be preferable.

Other reporting systems involved the use of 'near hit' cards which were completed by workers and recorded onto a database, or the use of duplicate books which could be anonymised or via daily safety checks. Most incidents were actioned by supervisors or management. The use of a database was considered beneficial as it made it explicit who was dealing with the incident and, according to workers, forced management into taking appropriate action. Workers were involved in the investigation process if the incident concerned them.

Larger quarries spoke directly of involving their workers and contractors in root cause analysis techniques.

Therefore, regardless of the system in operation or quarry size, it appears that accidents and near misses are reported, actioned by management and supervisors with feedback provided. The main variance is the degree of formality of the system and the ability to report anonymously. Anonymity in very small quarries is obviously more difficult.

3.2.6 Involvement in developing procedures/risk assessments

The extent of usability of procedures has been measured as one of the key factors in research using the HSL Safety Climate Tool[40]. Workforce consultation and involvement

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[36] Healey, N. and Sugden, C. (2012) Safety culture on the Olympic Park, Health and Safety Executive, RR942.
[37] Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.
[38] Reason, J. (1997) as cited in Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.
[39] Human Engineering, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit, RR367, HSE books.
[40] Healey, N. and Sugden, C. (2012) Safety culture on the Olympic Park, Health and Safety Executive, RR942

in developing risk assessments and procedures was apparent in all four quarries, although the extent of involvement varied.

One large quarry had a formalised system in place with risk assessments written jointly by the workers and team leaders. These were then updated onto a central system to ensure they were accessible to all. Two quarries recognised the importance of training individuals to ensure they can competently undertake risk assessments. In the absence of suitable training, one quarry ensured that managers discussed the risk assessment with workers to ensure understanding and obtain feedback. In another quarry risk assessments and safe systems of work were written by management due to an acknowledged gap in worker competence. Following consultation with workers, updated risk assessments and safe systems of work were distributed to the workforce for their review and feedback. Informal results indicated that workers were engaged in the new risk assessments and safe systems of work. In one quarry, responsibility for writing risk assessments fell to the supervisor who, as workers themselves found it difficult to find the time to dedicate to the task. However, any risk assessments were discussed with workers to ensure a full understanding of the risks and controls.

Ideally procedures and risk assessments should be developed in a way that promotes ownership by users, i.e. by involving them in their development and maintenance[41]. The more workers are involved in identifying the risks and associated controls the more likely they are to understand and follow them. By helping to develop procedures, workers, as the experts, are more likely to identify the potential for human error and ensure the procedures are relevant and practical for the intended task.

3.2.7   Rewards

Using rewards can serve to help build workforce trust[42]. Not all quarries provided tangible rewards to workers for health and safety.

One large quarry provided rewards for good health and safety ideas and a safety bonus linked to lost time frequencies. However, workers recognised that if contractors fail to adhere to health and safety the bonus is denied, causing workforce annoyance. Use of team rewards for engagement should therefore be used with care considering the local situation and team concerned.

The need for, and design of, a suitable reward scheme was still under discussion in one quarry. Previous rewards included barbeques, donations to charity and rewards for days without accidents. One quarry manager explained that rewards were more powerful when workers were not expecting them, e.g. schemes to reward those who generate ideas to solve safety problems.

In one location, workers felt that more could be done by management to offer genuine thanks to work undertaken safely rather than management attitude that 'health and safety is expected'.

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[41] *Reducing error and influencing behaviour, (2009).HSE books, HSG48.*
[42] *Healey, N. and Sugden, C. (2012) Safety culture on the Olympic Park, Health and Safety Executive, RR942*

3.2.8   Support provided to Management

Line managers

Line managers noted the positive support that they receive from their senior managers and directors. Line/quarry managers reportedly tap into senior managers' knowledge and experience, feel listened to and understood. This support was available to them as and when required, with an open door policy in operation. Other sources of support used included the HSE website, training courses and external auditors.

Senior managers

Senior managers reportedly tapped into a wide variety of Internet sources and other organisations for support. The importance of keeping these resources up to date was recognised. They included:
- Safequarry.com
- HSE website
- Institute of quarrying
- Quarry management magazine
- QNJAC
- IOSH (including the hazardous industries group)
- Mineral Products Association (MPA)
- Mineral Products Qualifications Council (MPQC)
- British Aggregates Association
- Quarry Professional Coaching (QPC)
- Quarry news magazine

Some also tapped into support from their own experience and previous colleagues in other quarries, consultants, corporate level support and members of their management team.

Senior managers reported that they would like more support from HSE in the form of partnership working, informal visits to offer advice/guidance and better signposting on the HSE website. Some senior managers said they would pay for HSE Inspector time as the advice offered is very useful due to their wealth of industry experience. Partnership working would facilitate a better working relationship between the quarry industry and HSE.

Knowledge sharing opportunities were considered beneficial for increasing support for senior managers. This would help smaller quarries keep up to date, ensure consistency between quarries and increase the opportunity for sharing best practice. Some advocated the use of a network allowing quarries to tap into one another's experiences of solving health and safety related problems.

Finally, one senior manager felt that better communication from manufacturers would help, e.g. manufacturers highlighting any problems with machinery.

3.2.9   The safety representative – role and selection

Role allocation/selection

The safety representative role was typically allocated based on the previous safety representative retiring, an individual volunteering or through nomination. They could remain in post for as long as they wished. There was a view that maybe more could be done to ensure those selected acquire the necessary 'softer' competencies to take on the role, such as communication, assertiveness, listening and feedback skills, particularly as this is a key role for ensuring workforce views are heard. The training offered for the role should take this into account. There was concern by one manager that some safety representatives take on the role because they feel obliged having been nominated by peers. The smallest of the quarries participating in the research had no need for a safety representative role as the teams were so small.

Incentives to take on the role

According to workers and safety representatives, no particular incentives were allocated to encourage take up of the role of safety representative. Managers confirmed this although safety representatives are given time and training to undertake the role. Workers and safety representatives however, considered incentives to be important, due to the role responsibilities and to help encourage more to volunteer. Some identified clear disincentives to becoming a safety representative, namely that the individual must pay to join the trade union body and that the role requires increased involvement and visibility with management, something that some of the workforce would not like.

Some safety representatives highlighted personal incentives for taking on the role, including:
- The role being a good addition to your Curriculum Vitae
- Receiving training
- Being given time to undertake the role
- A passion to motivate others to see the importance of health and safety

"the way I look at it is you can make your workplace safer and everybody come in and go home safely, it's got to be a good thing and…to me, that's, that's the incentive"

Safety representatives therefore appear to be motivated to continue in the role for personal reasons. Seeing the positive changes made in the quarry (such as improved safety records and workers feeling heard), receiving a positive response from senior management, and receiving engaging training were all noted as motivators.

"it's a good thing to do. The changes we've made in the quarry...when you look back over it, is, is really good, you can see a sense of achievement."

If safety representatives are more motivated for the reasons above, the choice of giving more formal monetary rewards therefore needs to be carefully considered and the final decision rests ultimately with the individual quarry.

Role description

Both managers and safety representatives were asked for their understanding of what the safety representative role involved. There was general agreement and consistency in their responses.

Typical duties included:
- Representing workforce views at meetings or with management directly

- Being a point of contact
- Feeding back information from health and safety meetings to the workforce (there was some concern that management are unsure how messages are communicated down)
- Undertaking audits and inspections
- Deputising for supervisors/management when required
- Actioning minor health and safety problems – helping the workforce find solutions to problems
- Ensuring that outstanding issues are dealt with
- Role modelling the correct behaviours and attitudes

Some managers and safety representatives considered the role important. Others had concerns that the role was becoming redundant as workers become more confident and capable of raising issues directly with management. The perception that 'everyone is responsible for health and safety' is also feeding this idea. Indeed, some safety representatives noted that often workers take issues directly to management rather than going to them.

"…rather than talking through a safety rep and that being disseminated…we're talking to everybody and we want everybody to take ownership of their own safety."

"I think everyone here is a safety rep. Everyone will look out for one another and everyone will raise an issue with you".

Trade union concerns

In larger quarries it was perceived that non-union safety representatives seem to enjoy their role less than those who are members of a trade union. Trade union officials did not allow non-union members and contractors into health and safety meetings, making consistent communication and messaging difficult. It was raised by some that management feel forced into having unionised safety representatives and would prefer to have employee safety representatives. However, whether they would have as much influence as a trade union representative was a counter argument that was raised. Being persuasive was considered a vital skill for a safety representative.

3.3 EFFECTIVENESS OF TRAINING COURSES

3.3.1 Training received

A variety of training was offered to safety representatives comprising formal courses, in-house training, and informal on the job mentoring and coaching. Specifically, training for safety representatives included:
- Trade union delivered courses, paid for by the trade union
- NEBOSH training
- IOSH training
- 3-4 day training course based at Loughborough college
- Company preferred courses, paid for by the company
- British Aggregates Association provide details of their upcoming courses which some quarries refer to
- On the job training/coaching/shadowing

- Monthly in-house training where the focus is on on-going learning and knowledge sharing

Safety representatives considered that training was vital to being able to undertake their role and they were happy to attend courses and on the job training as appropriate. Those who had been in post for a long time, or who were very new in post, felt that they had not received much training recently and that they would like more. On-going training was considered important to prevent complacency and aid memory recall. Management were happy to allow safety representatives time to attend training activities and send them on relevant courses.

There was concern about the trade union-led courses. Poor communication between management and the unions meant that some management were unaware of the content of the courses and therefore were reliant on safety representatives relaying this information themselves.   If quarries are unsure what is covered they may be inclined to supplement the training with other courses, impacting on cost, time and the potential for repetition or misguidance.

3.3.2 Effectiveness of the four day TUC-led training course

The four day training course was not widely used. Senior managers in the smaller quarries were aware of the four day training course but had not used it and were therefore unable to provide comment. Although both the larger quarries were aware of it, uptake varied. For one large quarry, whilst the senior manager considered the course to be very good, claiming that it should be attended by more than just safety representatives, others in the quarry had not heard of the course, suggesting a lack of awareness or poor uptake.

Only one large quarry used it as part of their regular training programme for safety representatives. There were mixed reviews from management about the course. Although good, there was concern that it may be too legislation focused and lacked practical application to the quarry industry. Consequently it was often supplemented with other training courses. There was also concern that the course may have been too technical for some, although this may have changed in recent years. Safety representatives felt the course was good and provided a solid foundation on which to build expertise in the role.

"armed you with the knowledge that...you can take into the field..."

Safety representatives and management were asked for their views on what the barriers might be that potentially hinder uptake of the course. The length of the course was noted. Four days is a long time to take safety representatives off shift and filling the person's post in the interim can be difficult. For many, sitting down in a classroom environment is very unnatural and difficult for those who have been out of formal education for some time.

Others considered that the course was not needed, as in-house training provided was sufficient and the course was not business critical. One large quarry felt that smaller quarries may find the course more useful to give safety representatives timely and sufficient health and safety knowledge and confidence to undertake the role.

One quarry considered that whilst the TUC badge might be a barrier for some quarries this was not the case for them. It was suggested that an HSE badge may help increase

uptake, although keeping it union-based may help keep safety representatives more involved.

3.3.3 Effectiveness of the one day MPQC-led training course

Uptake of this course was also poor. Although most senior managers were aware of the course, it was not used. The main barrier preventing uptake was cost. Managers noted that the cost of the course was high and they were able to find other training providers to deliver the same content for half the cost. This indicates that the content of the course was considered useful. There were concerns from one manager however, that the course was too generic. One larger quarry explained that should a safety representative want to attend the course, permission would be granted.

Only two safety representatives could provide comment on the course. Although one was unable to recall the content he remembers it being a positive experience, raising safety representatives' interest and sparking discussion. The latter individual also considered the course to be good despite some overlap with an IOSH course.

Issues to address here include the cost of the course and a potential review of the content to ensure its industry relevance and that it complements other courses available.

3.4 IMPROVEMENTS TO WORKER ENGAGEMENT

Participants put forward a variety of suggestions for improvements both at the local level and industry wide. In addition to the improvements to support senior managers (detailed in section 4.2.3), the following improvements were noted and are presented in no order of priority.

Local/quarry specific improvements:

- Competence and training:
  - Training on risk perception and awareness for the workforce was considered helpful to reduce their complacency and familiarity of risk.
  - Techniques to encourage an attitude/perception change from older members of the workforce towards a more positive health and safety attitude were advocated.
  - Training for the workforce on how to deliver toolbox talks was recommended.
  - Training for management to help them develop more effective interpersonal skills, deal with the 'hard to change' individuals and better deliver worker engagement techniques was considered important.
  - Training for managers and safety representatives on conducting risk assessments was considered necessary.

- Communication:
  - Better use of IT/technology was needed to aid communication and the cascading of messages to workers, especially transient work groups.
  - Improved communication was needed between trade unions and quarries to ensure consistent communication between union and non-union members.

- Prompt communication to workers from senior managers was needed on changes to regulation and work scheduling to prevent any negative impact on business efficiency.
- Consistent communication and cooperation from management was needed to ensure that they are 'walking the talk', listening to workforce concerns and taking appropriate action. Lack of communication and action can impact on workforce motivation to report problems.
- Smaller quarries considered that communication about health and safety that goes beyond the general day-to-day health and safety is needed.

- A reduction in the number of worker engagement initiatives and an increase in time to allow current initiatives time to embed were considered important.
- The potential re-introduction of reward schemes was felt important to motivate and encourage the workforce to engage with health and safety.
- The development of strategies to help reduce the amount of silo working was considered important.
- Improved partnership working between management and the workforce was felt important to improve health and safety. A commitment from both parties to do so was also required.
- More considered decision making from senior management was needed to avoid knee-jerk reactions/overkill to health and safety problems.
- More considered risk assessments and policy decisions to ensure that they cover the transition from work to home were considered necessary.
- Better involvement of contractors in health and safety meetings and communications were considered important.

Quarry industry improvements:
- Increased HSE involvement and support for safety representatives was suggested to help offer them direct advice to assist with interpreting legislation and guidance.
- Increased knowledge sharing/networking opportunities were considered important to allow members of management and the workforce to visit other quarries to share worker engagement best practice and optimise learning.
- The opportunity to make UK comparisons of performance across quarries in the UK was considered useful to enable better learning with others.

4. CONCLUSION

Worker engagement consists of several components: consultation, involvement and participation, which enable management and the workforce to work together effectively. This research has indicated some of the mechanisms by which worker engagement is taking place in quarries of various sizes, giving an understanding of how health and safety performance can be improved and maintained. HSE might consider using the findings of this research to inform future guidance on good practice for worker engagement.

Below are suggestions for improvements that QNJAC may want to consider to help the quarry industry in boosting worker engagement.

In terms of communication, quarries employed a raft of communication methods to good effect. They need to maintain them and refine methods that do not work so well. They may also consider strategies for wider communication between work groups. QNJAC might consider how to enable quarries to implement communication systems that ensure communication between teams and foster two-way communication for transient groups. To avoid the tendency for disproportionate responses to health and safety risks or incidents QNJAC might consider providing guidance to quarries on how to tailor effective health and safety communication to better engage workers.

Regarding management commitment to health and safety, there is a wealth of evidence that quarry management demonstrate this which was reinforced by workforce opinion. Visibility on site was important to all senior managers, although workload could hinder their ability to get out on site. Frequent site visits and proactive interaction with workers is something that QNJAC might want to encourage. The ability to challenge the senior manager appears to become more difficult as the quarry gets larger, which may also be a function of reduced visibility of senior management.

There was a concern related to management putting a price on safety. QNJAC might consider advising quarries to communicate the reasons behind health and safety decisions taken to ensure that full justification is given. Training for managers on effective listening skills might also be considered as workers noted that they can sometimes feel ignored. Some workers felt patronised by some health and safety messages, others felt there was a lack of management recognition of staff expertise.

Although reportedly much improved in recent years, workforce attitude to health and safety remains a barrier to engagement. Workers and managers perceived that attitudes such as 'health and safety is not my responsibility', 'it gets in the way of getting the job done' and 'I've been doing the task this way for years and not been hurt so it must be safe' are still apparent. Worker tenure and age were also felt to bolster these attitudes in some workers. Effective risk communication might be considered as well as techniques to help highlight personal susceptibility to risk to help increase engagement and change attitudes/incorrect beliefs.

Regarding opportunities for workers to raise health and safety concerns, overall, workers felt able to raise concerns with management, report incidents and near misses and most were empowered to have choice over equipment selection. The degree of formality of the reporting systems varied by quarry size. Of concern to many was the provision of feedback to workers on the outcomes of issues raised. QNJAC might consider encouraging quarries to review their systems to ensure timely feedback is

given with justification for decisions made. Concern over the anonymity of reporting was also mentioned. Quarries might benefit from having systems that can enable anonymous reporting and feedback if required. Consulting with workers about how they would prefer to report issues and accidents is preferable.

With regard to the safety representative role, training and support should be made available to enhance interpersonal skills of the representatives. Management and TUs should discuss how they can ensure that the role works effectively in a range of diverse workplaces (e.g. In large quarries or where there are dispersed or transient groups). Further concerns relate to trade union officials who refuse to allow non-union members and contractors into health and safety meetings, making consistent communication difficult.

Safety representatives received training although the extent of on-going training was mixed. QNJAC may wish to consider the provision of on-going support. A gap in communication about the content of union-based courses was highlighted, with some managers unaware of what their safety representatives are taught. This is a concern as it impacts on the ability to assess safety representative competence.

Only one large quarry made regular use of the four day TUC-led training course for safety representatives with mixed reviews as to its benefits. Potential barriers to uptake more generally included the course length and mis-match between learning style and target audience. QNJAC may want to consider these barriers going forward. The TUC badge was not considered a major barrier. Despite awareness of the one day MPQC course, uptake was also poor. Issues to address here include the cost of the course and a potential review of the content to ensure its industry relevance and how it complements other courses.

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6. APPENDIX ONE: CONSENT FORM

Please read each statement and write or type your name after each statement
(These can also be read to you over the phone if you choose to do so at the
start of the interview).

I confirm that I have understood the purpose of the research, have had the opportunity to ask questions, and understand what I am expected to do as a volunteer.

(Write or type initial here)…………………………

I understand that my participation is voluntary and that I may withdraw at any time, without giving any reason for doing so.

(Write or type initial here)…………………………

I understand that I will be interviewed for up to one hour and that the interview will only be audio recorded if I am happy with this.

(Write or type initial here)…………………………

I understand that any recordings will only be used for the purposes of this research (i.e. shared between the HSE/L research team only), and will be stored securely.

(Write or type initial here)…………………………

I understand that only data in 'anonymised non identifiable form' will be used in any dissemination of research findings.

(Write or type initial here)…………………………

I understand the reason for this research and agree to participate.

(Write initial here)…………………………

Your name…………………………………………………………………………………

Date…………………………………………………………………………………………

Signature……………………………………………………………………………………
(Please type your name if returning via email)

Name of
Researcher…………………………………………………………………………

Date…………………………………………………………………………………………

Signature……………………………………………………………………………

7. APPENDIX TWO: QUESTION SETS

Question schedule for interview with senior manager / line manager:

Introduction

- Thank you for agreeing to participate in this interview.

- We are talking to other managers across four other quarries up and down the country.

- The aim of this research is to explore the effectiveness of workforce engagement practices within the quarry industry. In particular we will be asking questions around:

    o What current worker engagement practices there are within your quarry

    o What helps and hinders worker engagement

    o How worker engagement might be improved

- There are no wrong or right answers, what we are interested in is your views and your particular experience of worker engagement practices.

- The findings will be used as part of a report of the findings which will be passed to HSE with suggestions for improvements to worker engagement within the quarry industry.

- Anonymity – confidentiality: All the information that you will provide will be anonymous and confidential. The findings will be summarised across all interviews and will not be traceable to any individual.

- Voluntary: This interview is voluntary and you can withdraw at any time without giving any justification. If there are questions that you do not wish to answer, it is fine, please let me know.

- Do you have any questions about this research before we start?

- Permission to record the interview: I would like to ask you to record the focus group to make sure the analysis will be done on accurate notes. Are you happy for me to record our conversation? At any point, feel free to ask me to stop recording if you wish to. If you are happy to participate please can you sign the consent form?

1   Background

Q1: Please can you provide me with some background details. How long have you worked in this quarry, and in this current job? How long have you worked within the quarry industry?

Q2: Could you tell me briefly about your role and main responsibilities, especially with regard to Health and Safety?

2   Worker engagement practices

Q3: What does worker engagement in health and safety mean to you? / How would you define it? (Note for interviewer: we are not looking for a theoretical definition, but more for understanding the respondent level of awareness of this topic)

Q4: How do you go about engaging with your workforce on health and safety?

- o Probe: Strategies/methods employed and their effectiveness.

- o Probe: Formal and informal methods.

- o Probe: Who is involved?

- o Probe: How do you engage with - sub-contractors, temporary staff, etc.?

Q5: How do you communicate health and safety with the workforce?

- o Probe: types and format (e.g. toolbox talks, safety meetings, safety committee follow up actions) and frequency; who communicates H&S information?

Q6: What level of feedback are workers given on H&S issues that they raise?

- o Probe: how do you feed back? (safety committee follow up actions, toolbox talks, etc.)

- o Probe: What do you think about this communication? (E.g. does it work well? If so, why?).

- o Probe: Do you consult with workers about changes in the workplace, i.e. seek their views in advance of commissioning new plant or machinery that they will be required to operate?

Q7: How do you best demonstrate your commitment to improving health and safety?

- o Probe: attitudes and behaviours

3.   Barriers and facilitators to workforce engagement

Q8: Are there any barriers that you experience in trying to engage/communicate with the workforce? How might these be overcome?

Q9: Is there anything in place that helps to facilitate worker engagement?

4.   Training courses for reps

Q10: What systems are in place to help members of the workforce take on the role of Safety Representatives (SR) or Representatives of Employee Safety (RES) in non TU workplaces?

Q11: The 5 day TUC-run training course[43]: what is your opinion of the effectiveness of this course?

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[43] *NB: HSE originally stated that the course was 5 days in length. However, during the customer review it emerged that the course was only 4 days.*

  o Probe: In increasing worker engagement

  o Probe: In increasing competency of safety reps

Q12: What is your opinion of the one-day training course that QNJAC supports and is delivered through the Mineral Products Qualification Council?

5. Improvements to workforce engagement

Q13: How could workforce engagement be improved across the site? And across the quarry industry?

6. Support for driving workforce engagement

Q14: (for line manager only) What support do you receive from senior management to help engage the workforce? (Prompt: visibility, training, advice, etc.).

Q15: (for senior manager only) What support do you use/tap into to help engage the workforce? (Prompt: particular networks, social media, specific literature/guidance/case studies; training, etc.).

7. HSE or (other) Support

Q16: Is there any support you would like to receive from outside agencies, e.g. HSE, QNJAC?

8. Close

Q17: Is there anything else that you would like to add that we have not covered?

Thank you for your time.

Question schedule for health and safety representatives

1   Background and role

Q1: Please can you provide me with some background details. How long have you worked in this quarry, and in this current job? How long have you worked within the quarry industry?

- o   Probe: Seek further clarification on exactly what their role involves as a safety representative

Q2: How was the Safety representative role allocated to you?

Q3: What motivated you to take on this role?

Q4: What incentives are in place to encourage you to perform this role? (Note for interviewer: time allocated; recognition within the organisation)

2   Worker engagement practices

Q5: How does the organisation engage with its workforce on matters of health and safety?

- o   Prompt for the different strategies, their effectiveness, formal and informal, and who is involved?

- o   Probe: Communication types, feedback,

3.   Barriers and facilitators to workforce engagement

Q6: Are there any barriers that you experience in trying to engage/communicate with the workforce? How might these be overcome?

- o   Probe: Management attitudes and behaviours at different levels (supervisory, middle, senior)

Q7: Is there anything in place that helps to facilitate worker engagement (or could be done to facilitate worker engagement)?

4.   Training courses for reps

Q8: Do you perceive there to be any barriers preventing workers' representatives from accessing the 5 day TUC-run training course?

- o   Probe: Barriers to promotion?

- o   Probe: What do you think of this training badged by TUC, does it help or not?

- o   Probe (if this has not been discussed as a result of previous probe): Do Managers perceiving it as a TUC initiative, therefore reticent to implement it?

Q9: What is your opinion of the effectiveness of this 5 day course?

- o Probe: In increasing worker engagement

- o Probe: In increasing the competency of safety reps

Q10: What is your opinion of the one-day training course that QNJAC supports and is delivered through the Mineral Products Qualification Council?

- o Probe: useful/not useful (in what way)?

5.   Improvements to workforce engagement

Q11: How could workforce engagement be improved across the site? And across the quarry industry?

6.   Close

Q12: Is there anything else that you would like to add that we have not covered?

Thank you for your time.

Question schedule for workforce

1   Background

Q1: Please can you provide me with some background details. How long have you worked in this quarry, and in this current job, and briefly what your role entails?

2   Worker engagement practices

Q2: What communications do you receive on health and safety?

- o   Probe: Types and format (e.g. toolbox talks, safety meetings) and frequency; who communicates health and safety information

- o   Probe: What do you think about this communication? (E.g. does it work well? If so, why?)

- o   Probe: Is the communication/consultation two-way?

- o   Probe: How would you describe senior managers' and line managers' communication/ involvement in health and safety? Any differences?

Q3: What opportunities/involvement do you have in health and safety within the organisation?

- o   Probe: What types of health and safety activities are you involved in and how frequently? (Probe: risk assessments, improvements around site, equipment selection, safe systems of work, etc.)

- o   Probe: consulted about changes at work, e.g. views sought in advance of commissioning new plant or machinery they will be asked to use?

- o   Probe: How does the organisation motivate/reward employees on health and safety? (e.g. incentives; links with performance)

- o   Probe: Formal and informal methods.

- o   Probe: Seek examples of suggestions workers have made and what happened.

Q4: How easy is it to report near misses/accidents? What happens as a result?

- o   Probe: acknowledgement, feedback, blamed?

Q5: What level of feedback do you receive if you raise health and safety issues?

- o   Probe: how is feedback given?

Q6: What encouragement is given to you to take on the role of safety representative / representative of employee safety?

- o   Probe: Does anything put you off becoming a safety rep?

3. Barriers and facilitators to workforce engagement

Q7: What difficulties may hinder engagement/communication with the workforce? How might these be overcome?

4. Improvements to workforce engagement

Q8: How could the workforce be engaged more in health and safety matters across the site?

5. Close

Q9: Is there anything else that you would like to add that we have not covered?

Thank you for your time

An exploration of the current effectiveness of worker engagement practices in the quarry industry

This study was instigated by the Quarries National Joint Advisory Committee (QNJAC) on the basis that worker engagement practices were not perceived as widespread within the quarry industry. Thus, the present qualitative study explored how worker engagement in quarries is achieved and what makes it more challenging.

Worker engagement is about going beyond workers' consultation. Workers and their representatives need to be involved in decisions in order for them to be committed to health and safety (H&S).

Findings suggest that a great deal of effort is made to engage quarries' workers in H&S. Management commitment to H&S plays a key role in workers' engagement. However, management visibility on site needs to occur more often to create or sustain workers' engagement. A variety of communication methods proved to be essential to engage workers in multiple ways and on a continuous basis but H&S messages need to be relevant to their audiences, and proportionate in quantity. Worker attitude to H&S has improved although resistance from some groups still persists. Safety representatives play an important role in increasing attention to H&S although their role could be better exploited in some workplaces and their training courses being better implemented.

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