

3M Transcript for the following interview: Ep 62 Peter Knott – Coal Dust Black Lung Part 1

Mark Reggers (R) Peter Knott (K)

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Welcome to the 3M Science of Safety podcast everyone. I'm Mark Reggers, an occupational hygienist who likes to ask the questions why, how and please explain.

(R) Today I'm asking all those questions to Peter Knott from GCG. Welcome, Peter.

(K) G'day Mark.

(R) Well, I should say welcome back. We did do real time and video exposure monitoring earlier on in the year and I thought, 'We'll have you back.' You sound like a knowledgeable fellow.

(K) Thanks very much.

(R) So, today, we are talking about coal dust and black lung. This is part one of two episodes we're going to do, because there's a fair bit of content that we do want to get into. But for those that haven't listened to the previous episode we did do, can you please introduce yourself? Who are you, where are you from, and maybe a little bit of your background if that's okay?

(K) Yeah. I've been an occupational hygienist for probably 30 years I suppose now, originally in the aluminium industry in the Hunter Valley, but went into coal fired power and worked for 3M for a few years and mining and then yeah, I've been consulting with GCG for a number of years.

(R) So, we are talking about coal dust. Now, I think most people in the health and safety space probably would've seen coal dust in the news in the last 12 to 24 months. Why is this the case? Coal mining's been around for a pretty long time.

(K) Coal mining has been around for a long time and unfortunately the health effects of coal dust exposure have also been around for a long time. And recently, there's been a number of cases of lung disease from coal mine dusts that have occurred in Queensland miners and it was a disease that was I guess thought to be almost eradicated but yeah ...

(R) It's not the case by the sounds of it.

(K) Not the case unfortunately, no, and it's a disease that's only caused by coal dust exposure. So, if the disease has been around, then people have been overexposed to coal dust.

(R) Now, you hear of inhalable and respirable coal dust. Is one more hazardous than the other, or does one cause worse health effects than the other?

(K) Well, because the target organ for the disease is the lung, then particles of coal dust which enter the lung are those that cause the most damage. So, particles that fit the respirable curve as we hygienists love to talk about, particles that size, they're the ones that are most danger. Inhalable dust is all of the dust that you can

breathe in through your nose, so everything that gets in from your nose all the way down to the alveoli, that's the inhalable fraction. And there's some evidence that that inhalable fraction is also responsible for upper lung respiratory conditions like bronchitis and things like that, whereas the finer stuff, it gets down and it causes the black lung, the coal workers pneumoconiosis.

(R) So, yes, black lung and pneumoconiosis is the stuff you read about in the news. But what are those diseases, and what's actually happened in the lungs for that to occur?

(K) Well, there's essentially two types. There's an emphysema which is where the air spaces in the lungs start to break down and you end up with large void spaces in the lung. And there's also a fibrotic disease progression that generates a collagen or nodule in your lung around the particles that are deposited there. The effect of those factors is that it reduces people's ability to breathe.

(R) So, Peter, how much do workers need to breathe in for these negative health effects, like pneumoconiosis and black lung to occur?

(K) Like a lot of exposure, it's a function of how much and for how long. And in the past, it was believed that it was something that occurred after 30, 40 years' exposure and then you developed ... and people developed black lung, CWP. What's happened in the last 15 years, I suppose, certainly in the US and we've seen that in Australia, is that there are younger miners that are developing this disease and it's progressing much quicker than it has in the past. So, something's going on there. It could be higher levels of exposure rate incurred over a shorter period of time. It could be changes in the types of dust that people are being exposed to, or maybe that there's some additional silica or something like that getting in there, some rock or other than just the coal. The disease, it appears, has changed.

(R) Are different types of coal mining environments more hazardous than the others, so underground versus open cut that you've seen in your travels that one type is more at risk than the other?

(K) I wouldn't say that they're more at risk than the other. They've got differences, so underground obviously, the ventilation is obviously much more restrictive than in open cut. So, what you tend to see in those situations in long wall and development panels that yes, the dust exposures are a bit higher than what you experience in general in open cuts. Having said that, there's been a lot of attention on dust control in underground mines in the last probably 18 months as a result of this CWP resurgence. So, there's much more attention being paid to the effectiveness of controls that are currently out there that people are using underground. In open cuts, it's often a mixture of the dust, so you're often getting an exposure to coal dust, but also overburden, so rock dust. If you've got people in drills or whatever, they might be drilling through overlying strata, down to a coal seam, so they're going to get a mixture of dust exposures. So, one of the terms that's being used now is more around coal mine dust lung disease, so it's not just coal. It's this mixture of coal and rock and mineral particles and silica that are all milled together to produce an outcome.

(R) So, irrespective of the source of the dust, it's still dust exposure, whatever it is, and that needs to be addressed to reduce that exposure.

(K) Exactly. Fundamentally, it's a dust issue. It's not coal dust or silica dust or rock dust. It's dust, and you need to deal with that.

(R) What about health surveillance? How prevalent is health surveillance when we come to identifying these diseases?

(K) Well, one of the big findings out of the Queensland inquiry on pneumoconiosis is a revamping of their health surveillance scheme. New South Wales has had a health surveillance scheme in place for many years. And you've got other jurisdictions like Western Australia who have got requirements in there for health surveillance of miners as well. So, overall, I think this issue has sharpened people's focus on the role of health surveillance. Health surveillance is not an annual or semi-annual check up to see if you're fit for work. It's not a fitness for work

assessment. What we're trying to look at is the early indicators of a disease potentially or precursors to the disease where we can make an intervention to limit people's further progression or exposures, whatever.

(R) So, when I think of workers being exposed to coal dust, I think about the people on the front line or in the coal mine so to speak, but what about the people handling the coal? What about the port workers? What about the people in the power stations? They'd be handling a fair bit of coal as well. How do their exposures compare to the people underground or in the open cut mines?

(K) My experience has been that so coal terminal workers and power station people have considerably lower exposures than the actual miners. So, if you wanted to look at it in terms of a sliding scale, your underground guys, obviously they're exposed to higher levels. And then you've got open cut. Then you end up with power station guys and then the terminals, the coal terminal, shipping and all those people. So, their exposures at the transport side of things is a lot lower than what miners get.

(R) But still, those workplaces need to be aware, to confirm what those levels are, rather than, "Hey, we're port workers. It's going to be low." So, you've still got to do the right thing if you are in that particular supply chain side of things.

(K) Exactly, yeah. So, the railway guys, the transport people that unload it off the trains and into stockpiles and then put it onto ships or get it off conveyors and put it into power stations, all of those, there should be some assessment of what their coal dust exposure is, just what their dust exposure is really. And if there are situations or particular tasks where they may be exposed to slightly higher levels than normal, then you look at the controls for those jobs.

(R) So, that's pretty much part one, but before we finish up, Peter, any key takeaways or highlight points you'd like to leave with our listeners when we talk about coal dust and some of these diseases that unfortunately we're seeing out there of recent memory?

(K) It's an illness that has been historically examined by a lot of people over the years, so there is a lot of information out there on the risk factors for people developing coal worker pneumoconiosis and other coal mine dust lung diseases. But really, it's an issue of how much you're getting exposed to and for how long and that's what it boils down to, and if you can reduce either of those things, then that's what you should be aiming at.

(R) That's really any contaminant when you talk about occupational hygiene. Lower is always better and no different with coal dust. So, people that are interested in finding out a little bit more about coal dust and some of the diseases, where would be a couple of good starting points or resources they should head online?

(K) Well, the regulators in New South Wales and Queensland have some good resource online specific to Australian conditions, so Coal Services in the Department of Natural Resources and Mines in Queensland, but also you've got a lot of work that's been done in the US with NIOSH and their mining people, and they have a lot of research work and research papers that they've done on coal mine and coal workers and coal workers pneumoconiosis.

(R) We'll make a lot of those links available on our blog page with some of those resources. And so, for our next part, we're going to be talking a bit more about exposure standards, what are some of the coal dust controls that coal mines and workplaces should be looking at, but thank you so much for coming in again, Peter.

(K) Thanks Mark. Thanks for asking me.

(R) Thanks for listening everyone. You can get in contact with the show by sending an email to scienceofsafetyanz@mmm.com. If you have any questions, any topic suggestions or you'd like some assistance around selecting PPE or respiratory in your workplace, especially around coal dust, 3M are certainly here to help. You can also visit our website, 3m.com.au/sospodcast for further resources on coal dust and the chat that we've just had. We will have a transcript of the conversation

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