"Time to get serious about skin cancer prevention"[26]

Greater efforts are required to control occupational exposure to harmful solar ultraviolet radiation

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A submission to the
Independent Taskforce on Workplace Health and Safety
in response to the
Safer Workplaces Consultation Document

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Who we are

This submission was prepared by Research Associate Professor Anthony I. Reeder (Director) and Bronwen McNoe (Research Fellow) of the *Cancer Society* Social & Behavioural Research Unit (SBRU) at the Dunedin School of Medicine.

The SBRU was established in 1990 and has continued since with core funding support from the Cancer Society of New Zealand Inc. and the University of Otago, supplemented with project grants from a range of sources.

What the Cancer Society Social & Behavioural Research Unit (SBRU) does

The main role of the SBRU is to carry out research and provide research based evidence to help inform efforts to achieve the goals of reducing cancer incidence, impact and inequalities in New Zealand.

A key area of SBRU research is skin cancer, about which Unit staff and postgraduate students have published more than 30 refereed scientific journal papers and numerous reports - including the solar ultraviolet radiation (UVR) exposure of outdoor workers, which is the focus of this submission.

The SBRU has contributed to NZ Skin Cancer Steering Committee activities since 2000, producing two major reports which helped set the agenda for subsequent actions.[41; 42] We work closely with Cancer Society staff, both nationally and regionally, and have collaborated in a number of skin cancer related activities with other agencies including the Health Sponsorship Council (now Health Promotion Agency (HPA)), the Ministry of Health and the Accident Compensation Corporation (ACC).

We are currently collaborating with the HPA on up-dating our earlier report on sun protection policies and practices among NZ territorial authorities, which includes their response to the employment of outdoor workers.[43] We recently initiated qualitative sun protection research among forestry workers, an occupational group which earlier research indicated was among the least likely to perceive the risks from sun exposure or report sunscreen use at work.[30]

On the basis of our research experience, we submit that with respect to the need to control potentially harmful occupational UVR exposure, the current review of New Zealand workplace health and safety is very timely – there having been only minor attention paid to this issue since NZ guidelines were introduced in 1994 and reissued in 1997.[37]

In our submission we follow the general sequence used in the Discussion Document and address many of the specific questions raised for comment at the end of each major section of that Document.

Background: Descriptive epidemiological overview of skin cancer in NZ

Skin cancer is the most common type of cancer in NZ and it has been estimated that it accounts for over 80% of all cancers diagnosed in NZ annually.[36] A number of work-related exposures have been associated with skin cancers including radiation, polycyclic aromatic hydrocarbons and arsenic.[50] ***In this document we focus on the effects of solar ultraviolet radiation (UVR) on the skin, which is the most common of these exposures and our area of expertise.*** Occupational UVR exposure can also have negative effects on the eye, but that is not our focus here.

Cutaneous malignant melanoma (CMM) is the most serious type of skin cancer, is readily invasive and tends to metastasise to other and distant sites. However, if detected early the prognosis is good. Incidence rates for CMM have risen markedly over the past three decades.[38; 14; 25] There were 326 deaths from CMM in NZ in 2009.[32] To put this figure into perspective, the national road toll for the same year was 309.[35]

NZ and Australia have the highest rates of melanoma in the world, although NZ mortality rates tend to be higher.[15] The most recent NZ published (i.e. not provisional) statistics report 2,212 new melanoma cases in 2009 with registration rates of 42.8 and 33.6 per 100,000 for males and females, respectively, or 37.8, overall.[32] In 2009 in NZ, the risk at birth of developing melanoma before the age of 75 years (i.e. lifetime or cumulative risk 0-74 years) was approximately 4.33% for men and 3.34% for women.[49]

Non-melanoma skin cancers (NMSCs) are the most common types of skin cancer. They primarily consist of squamous cell carcinomas (SCCs) and basal cell carcinomas (BCCs). These NMSCs arise from either the basal or squamous skin cells, do not generally metastasize (spread to other sites) and are not commonly fatal. They can, however, become locally invasive, require surgery and cause considerable disfigurement.

Tracking incidence and mortality rates over time is problematic as NMSCs are not required to be registered with the NZ Cancer Registry. However, based on extrapolation from regional pathology laboratory records it has been estimated that there are, at least, 67,000 new cases of NMSC in NZ each year.[36] The number of deaths from NMSC in 2009 was 119.[32]

The risk of developing NMSC has not been estimated for NZ. However, in Australia, it has been estimated that two out of every three Australians will be diagnosed with skin cancer by the age of 70 years. The risk is likely to be similar in NZ.[3]

Economic and social costs - Although mortality rates for skin cancer are relatively low, the very large number of NMSC cases in NZ inflicts a substantial cost burden on the health system and society, overall.[36] An economic analysis estimated the annual economic cost of skin cancer to NZ as in excess of $123 million[36]:

- total life years lost was 4,741;
- the economic contribution of those persons, if alive, was $66 million ($59.3 M for CMM and $6.7 M for NMSC);
- health care costs for skin cancer and related neoplasms totalled $57 million, excluding GST ($5.7M for CMM, $51.4M for NMSC).

The first two items, above, are influenced by the greater impact of CMM among younger age groups.

Skin cancer risk and prevention - The major personal risk factors for NMSC and CMM are well established and include having: fair skin, fair hair and blue or green eyes; a large number of moles; a family history of skin cancer; and being male.[6]

Excessive UVR exposure is the most important potentially modifiable risk factor for the primary prevention of all types of skin cancer, with 95% of all skin cancers thought to be related to excessive UVR exposure in high UV environments,[2] as NZ can be, seasonally. Solar UVR is invisible to the human eye and, unlike heat, its burning effect on the skin is not immediately apparent. Both of these factors contribute to the problem of achieving timely prevention of skin damage.

The International Agency for Research on Cancer (IARC) has classified UVR as a Group 1 carcinogen ('definitely carcinogenic') in humans.[24] This includes both chronic and intermittent UVR exposure, so outdoor work, whether intermittent or routine is a potentially important component of an individual's exposure to UVR.

The pattern of UVR exposure is considered to vary between skin cancer types:

- CMM has been associated with intense, intermittent exposure and occurs most commonly in areas exposed to the sun sporadically.[38; 25] This may be important for employees, such as engineers or building inspectors, who spend much of their working day indoors, but whose work sometimes requires them to visit outdoor work sites and become intermittently exposed to UVR.

- Clinical evidence suggests that cumulative sun exposure is responsible for the development of SCC, since it occurs most frequently on body sites maximally exposed to the sun.[38; 25; 46] This is a potentially important risk for those workers employed over periods of many years in largely outdoor occupations, such as agriculture and fishing.[14]

- BCC is related to both acute and chronic sun exposure, providing mixed effects of cumulative and intermittent sun exposure. Clinically it is most commonly located on the head and neck.[38; 25]

Although the evidence linking various types of UVR exposure to NMSC and CMM is strong, and high rates of BCC and SCC have been found in occupational groups that work outdoors,[14] some studies which have specifically attempted to test the association between occupational UVR exposure and skin cancer have produced inconclusive results. This is considered to be due to methodological issues – so it is important to clarify what these are and how they can be taken into account:[53]

- *Occupational exposures*- determining an individual's occupational exposure to UVR is often problematic. For example, in many of the relevant studies, cancer registry data were used to identify cases of CMM and NMSC, and then the individual's occupational UVR exposure is estimated by using their current job title.[4; 9; 16; 1; 7] This does not account for the number of hours that an individual may have worked outdoors; the period of time spent in outdoor occupations; whether or not they changed jobs during their lifetime or were

employed in positions that could be either indoor, outdoor or a mix of both (e.g. builder);

- *Exposure type* - it can be difficult, retrospectively, to disaggregate lifetime occupational exposure from lifetime recreational exposure;

- *Self-selection bias* – individuals with fair skin types, who sunburn easily and are at increased risk of CMM and NMSC, may be less likely to choose outdoor work as a career.[22, 17] Therefore, it is important that like should be compared with like and not with the general population for which skin type is unspecified.

Despite these challenges, a rigorous meta-analysis of studies on outdoor workers and SCC, conducted up to 2010, found that individuals with higher UVR exposure were at significantly increased risk. The pooled odds ratio was 1.77 (1.40-2.22), indicating a 77% increased risk.[46] There is also evidence of increased risk of CMM among outdoor workers who have experienced repeated sunburns.[10]

Exposure measurement - Studies in NZ and internationally have used dosimeters to measure the actual individual UVR exposure of specific groups of outdoor workers. It has been consistently demonstrated that this exposure far exceeds the recommended international upper limit [12; 18] (30 J/m^2 per 8 hour period or 1.08 SED/day).[33; 21] The evidence indicates that outdoor workers may receive up to six to eight times the dose of UVR that indoor workers receive.[45] The time of exposure is also important. Evidence from Australia indicates that, by being outdoors around solar noon during summer, recommended levels of UVR will be exceeded in 10 to 12 minutes.[11] This highlights the importance of protecting workers both during work and break times.[18; 30] The potentially exacerbating effects of a range of photosensitising agents, including those used in the workplace, also need to be considered.[22]

SBRU research quantified the 'real-time' (i.e. as it happens) personal UVR exposure of 77 NZ outdoor workers in three occupations, using electronic dosimeters.[18] The few studies that have attempted to quantify actual occupational UVR have generally used much smaller numbers of workers than was the case in the SBRU study and measured cumulative exposure,[31; 47; 48] rather than the time stamped exposure which provides the more specific information that can be used to guide the targeting of interventions. Our research confirmed that UVR exposure during summer months in central Otago in the three outdoor industries studied (construction, horticulture and roading) routinely exceeded levels at which skin damage was likely to occur.

Responses to questions identified in the submission template

Who gets hurt, killed or suffers from ill-health or disease as a result of work?

Q1 What do you think is driving the differences in workplace health and safety outcomes for different demographic groups?

Any worker exposed to UVR during their working day is potentially at risk of developing occupation-related skin cancer. These workers fall into two main categories:

1. 'Outdoor workers' – those who work outdoors most of the time. The industries where these workers are concentrated include agriculture, horticulture, farming, forestry, fishing and construction. Such workers spend long periods working outdoors, often during the hours when UVR is at its peak. Workers typically engage in these occupations over periods of many years.

2. Indoor/outdoor workers – those workers who are intermittently exposed to UVR.

Determining exactly how many NZ workers are exposed to excessive UVR during their working day is difficult. As a starting point, we know from the Department of Labour Statistics that 14.5% of the NZ workforce has been defined as 'outdoor workers'.[5] However, this does not include all workers who spend time intermittently exposed to UVR.

We argue that any worker who is required to spend work time outdoors in the sun, whether intermittently (e.g. a building inspector going out to visit a site) or intensively (e.g. a farmer) is potentially at risk of occupation-related skin cancer. The intermittently exposed group may be negatively affected by less workplace provision of protective equipment and less awareness about the need for protection from the sun than among workers who are outside all day. Nevertheless, the same mitigation strategies can be generalised to both groups, i.e. when outdoors it is necessary to protect the skin and eyes from excessive solar UVR.

Males are more likely to be diagnosed with, and much more likely to die from, skin cancer than females. As in the US,[34] the NZ incidence rate of CMM for males significantly exceeds that of females (42.8 vs. 33.6 per 100,000) and the male mortality rate in NZ is more than double that of females (7.2 vs. 3.3 per 100,000).[32] These patterns may, in part, be attributable to the greater concentration of males in outdoor occupations, such as agriculture, construction, forestry and fishing. In addition, males may be less likely to engage in sun-protective practices and less likely to seek medical advice early. Thus, early detection strategies among outdoor workers may usefully complement workplace skin cancer primary prevention policies and practices.[13]

Age is an independent predictor of skin cancer.[17] Occupational skin damage from UVR exposure tends to develop over a relatively long time period. However, although negative outcomes predominate among older age groups, younger age

groups need protection to help prevent later disease. Furthermore, melanoma can develop at a relatively young age. Older workers may tend to be more sun protective because of observed skin damage, either to themselves or fellow workers; younger age groups may tend to be less protective because the opportunity to tan may be viewed positively, while potentially negative outcomes seem far away in time. The National Sun Survey in Canada surveyed outdoor workers and found that those who were male and in the 16-24 year age group spent the greatest amount of time working in the sun, but were also the least likely to use sun protection.[29] The recruitment and training periods, therefore, are times when the issue of sun protection should be addressed.

Some industries where outdoor workers are employed (such as horticulture and fishing) are more likely to involve temporary, casual, short-term or seasonal work. Such workers may be less likely to have control over their working environment than workers with permanent contracts and in other industries. Individual workers in less protective workplaces may only be able to protect themselves from excessive sun exposure by using their own clothing and sunscreen when protective gear may not be routinely provided in the workplace. It is important that all who work outdoors are equally well protected against excessive UVR.

Q2 What changes are needed to the workplace health and safety framework to improve outcomes for demographic groups with higher than average rates of injury and illness?

A workplace culture needs to be incentivised to promote appropriate mitigation strategies which include the provision of sunscreen, protective clothing and, where possible, adequate shade from UVR. The rescheduling of work activities around the position of the sun is another strategy.[25] Ultimately, a collaborative effort between workers, unions and employers which is guided and mandated by appropriate occupational processes is required to ensure that those working outdoors are appropriately protected from harmful UVR exposure. Among older age groups, the early detection of skin damage and emerging skin cancers can potentially reduce the risk of the most serious health outcomes. For outdoor workers, it is plausible that regular full body skin checks within a controlled clinical context may help to improve skin cancer outcomes – although currently this is speculative because of a lack of suitably designed intervention studies.[14]

Regulatory framework

Q3 What do you think the challenges are with the current workplace health and safety regulatory framework?

In 2003, The Ministry of Health New Zealand Cancer Control Strategy highlighted the need to 'reduce the number of people developing skin cancer due to UVR exposure' and to 'reduce the number of people developing occupational-related cancers'. In 2004, it was recommended to the National Skin Cancer Control Steering Committee "That existing skin cancer control primary prevention objectives should be extended to specifically acknowledge the elevated NMSC risk among outdoor workers, and the need to develop research and programmes targeted towards high risk

occupational groups."[42] Other than the development of generic educational resources, since that date there has been little evidence of any systematic interventions to address harmful occupational UVR exposure.

There are at least three challenges to conveying the importance of considering UVR as a workplace hazard:

- Firstly, although the causal pathway between UVR exposure and skin cancer is established, the available evidence specifically linking outdoor work and skin cancer is limited. This is because (as outlined above) isolating recreational and occupational UVR exposure over a person's lifetime as independent risk factors is very challenging; and a self-selection bias operates, influencing who becomes an outdoor worker.[17]

- Although severe sunburn may be an identifiable acute event, UVR exposure does not result in an immediate catastrophic outcome as do some other fatal or serious workplace injuries. Skin cancer has a latency period of many years and so may be less compelling to address.

- The existing 1994 / 1997 UVR guidelines[37] are appropriate, but lack adequate promotion or any monitoring to determine whether or not they are being implemented in workplaces. The challenge is to ensure that monitoring of risk reduction policies and practices occur.

Q4 How do you think the workplace health and safety regulatory framework could be improved?

UVR exposure should be considered a priority area in the regulatory framework, specifically identified, and listed separately from the other 'cancer causing agents in the workplace' because of the particular challenges and strategies associated with mitigation of this ubiquitous hazard among outdoor workers. It should be a requirement within the regulatory framework that the steps taken in a workplace to mitigate the hazard of harmful occupational UVR exposure be demonstrable in policy and practice.

Regulators' roles and responsibilities

Q5 How effective are the regulators in influencing workplace health and safety outcomes?

In New Zealand, the Health and Safety in Employment Act 1992 (amended 2001) specifies that employers must protect the health and safety of their workers and that all workers must co-operate. Significant occupational hazards have to be identified and assessed and appropriate controls implemented and monitored.[37]

As exposure to sunlight does not result an immediate catastrophic event there may be less willingness to recognise UVR as a legitimate work-place hazard. However the WHO and the International Labour Organisation have recommended that a comprehensive strategy is required to minimise the risk from UVR amongst outdoor

workers as the sun cannot be controlled like other work place hazards.[51] A good starting point would to be to apply and monitor the existing guidelines for the protection of outdoor workers previously provided by the Department of Labour.[37]

Q6 How could the regulators' roles and responsibilities be changed to improve their effectiveness in influencing workplace health and safety outcomes?

Policies and practices to mitigate harmful UVR exposure need to be regularly reviewed and checked on-site. Although generic health and safety programmes exist, they need to include specific sun protection components. The SunSmart Schools programme may provide a useful model for the development of a more high profile workplace programme.

New Zealand's changing workforce and arrangements work

Q7 What impacts are New Zealand's changing workforce and work arrangements having on workplace health and safety outcomes?

Casualization of the New Zealand workforce is likely to differentially affect the type of industries where outdoor workers are concentrated. For example, seasonal workers, who often work outdoors, are commonly found in the horticultural industry. In many cases a company employs a contractor to undertake the work on their behalf and so the responsibility for the health and safety of workers and the identification of hazards is devolved to the contractor. The SBRU undertook a survey of territorial authorities in 2006 and found that contract workers represented the largest proportion of outdoor staff for most councils.[40] Less than half of the councils required all of their outdoor workers to take sun protection, but even fewer (less than one third) required contractors to make comparable sun protection provision.

Q8 What changes to the workplace health and safety framework, if any, are needed as a result of the changing workforce and work arrangements?

It should be mandatory not only to document the processes and strategies for mitigating the effect of UVR exposure as a potential workplace hazard, but also for these to be subject to regular monitoring.

Work participation and engagement

Q9 How effective do you think worker participation is in improving workplace health and safety in New Zealand?

A survey of NZ outdoor workers found that almost all were unable to reschedule tasks to avoid working in the sun during peak UVR periods.[18] It is important that employers and supervisors consider UVR when planning how work is scheduled throughout the day. It is crucial that workers are aware of the risk of excessive UVR exposure.[51] Workers have control over their individual behaviours with respect to mitigating UVR exposure, including personal use of sunscreen, broad brimmed hats

and sun protective clothing. However, it is important that workers have the opportunity to receive workplace support for personal sun protection and that sunscreen, appropriate hats and protective clothing are provided and their use strongly encouraged, if not mandatory. The use of sunscreen on exposed skin should not be the primary protective strategy as the protection that it provides is subject to reduction through the effects of insufficient application (and reapplication), sweating and rubbing, so its use should only be encouraged on parts of the body where clothing cannot easily be used.[30]

Q10 What improvements can be made to worker participation in workplace health and safety so as to get better workplace health and safety outcomes?

One of the barriers identified to wearing protective clothing among farmers was that it caused overheating.[28] Clothing needs to be designed to be acceptable to workers and appropriate for the tasks they carry out. For example, it is possible to extend to workplace protective clothing the use of breathable fabrics currently used in recreational and athletic contexts.

Many outdoor workers in NZ have misconceptions about their personal resilience to skin cancer, based on beliefs about "innate immunity, over exposure in the past, perceived normalcy of risk; prioritization of other workplace risks and an ambivalent attitude towards sun exposure".[30] Although the education of workers about the risk of excess UVR exposure may be a necessary starting point, the lack of such knowledge is not associated with less appropriate protective practices, once workplace culture and the provision of protective equipment are taken into account, indicating that workplace factors are likely to be more influential than personal knowledge.[39] Nevertheless, worker participation has the potential to improve workplace health and safety by contributing to the building of a workplace culture that is health conscious and proactively protective. Champions of this culture drawn from among the workforce could potentially exert a positive influence.

Leadership and governance

Q11 To what extent do directors and other senior leaders provide effective leadership and governance of workplace health and safety?

In 2005, in Victoria, a government policy was introduced which required construction industry employers to have a sun protection policy in place to protect building workers from UV exposure. Furthermore, in Australia, the motivation to promote shade and to implement other UVR protective practices is reinforced by the potential of future compensation through the legal system for skin cancer outcomes.[11] This incentive is reduced in the NZ context, given limitations on the ability of workers to sue employers under ACC legislation. In Australia there have been cases where workers who have developed skin cancer sued their employer for not providing adequate workplace protection from UVR. For example, in Queensland a Australian postal delivery worker was able to successfully get his employer to accept liability for his skin cancer and agree to cover the medical and legal costs.[8]

In an Australian survey, workers with mandatory sun protection policy had reduced sun damaged skin compared to workers in workplaces with a voluntary sun protection

policy.[52] Given the different liability situation in NZ with the Accident Compensation Corporation, and the lack of precedents, there may be less incentive to implement appropriate protective practices. Alternative incentives need to be explored.

Q12 What improvements can be made to directors' and other leaders' participation in workplace health and safety, so as to get better workplace health and safety outcomes?

Published SBRU research found that a factor strongly associated with worker' personal sun protection in the workplace was perceived workplace support (supportive workplace culture, provision of sun protective products).[19] Recent work has confirmed that these factors are strong predictors of personal sun protective practices in the workplace.[39] Accordingly, emphasis on the creation of a supportive workplace context (rather than relying primarily on individual acceptance of responsibility) is justified, and would be strengthened by the informed co-operation of individual workers, unions and employers. Although individual responsibility to use protection is required, the incentives provided by workplace practices and culture are likely to be especially influential to helping to improve personal sun-protective workplace practices.

Capacity and capability of the workplace health and safety system

Q13 To what extend do firms have the capacity and capability to effectively manage workplace health and safety issues (including through external resources)?

No specific response.

Q14 What options are there for improving firm level capacity and capability to deliver better workplace health and safety outcomes?

Published recommendations on the primary prevention and early detection of skin cancer do not differ significantly between outdoor workers and the general NZ population. The common focus is on reducing harmful, excess exposure to UVR.[51; 25] The common strategies include limiting or minimising exposure to the sun during peak UVR radiation times (10am to 4pm, especially September to April in NZ), the wearing of protective clothing and the appropriate application of sunscreen to any exposed areas of skin. However, since outdoor workers cannot avoid potentially harmful UVR exposure, strategies are needed to mitigate that exposure. Examples might be that the shady side of a building could be painted during peak UVR hours; UVR protective cabs could be used on vehicles and moveable covers over specific work areas – like those used by telecommunication workers to provide protection from rain while working in inspection shafts.

The US Centres for Disease Control and Prevention undertook a comprehensive systematic review of interventions to reduce UVR exposure in outdoor workers. It did not find sufficient evidence in studies published up to 2000 as to whether or not educational and policy approaches in occupational settings were effective at

improving "covering up" behaviour or increasing shade use during peak UVR hours.[45] However, that finding was mainly due to insufficient research in the area. In a more recent publication the authors recommended that "technical and organisational procedures be completely independent of individual compliance."[25] The type of recommendations made by International Commission on Non-Ionizing Radiation Protection (In Collaboration with the International Labour Organization and the World Health Organization) and others include:[51; 25]

- Limit or minimise exposure to the sun of outdoor workers during peak UVR hours and, where it cannot be mitigated, reschedule the job rotation so that all exposed workers receive a shared, but reduced risk. Awnings can be used to reduce the intensity of UVR by half.

- Protective clothing, such as long-sleeved shirts and protective hats, has a greater impact than the use of sunscreen. It has been estimated that regular use of a wide brimmed hat can potentially reduce lifetime skin cancer risk by 40%.[27] The fabric weave and colour are also important factors in how much UVR protection is provided by clothing.

- Sunscreen should be used as an adjunct to other measures rather than be the focus of UV protection. Issues around sunscreen include that: users tend to apply far lower amounts of sunscreen than that required to achieve the product SPF rating; wearing sunscreen may convey a misleading sense of security which may result in extended sun exposure; sunscreen may act as an irritant; sunscreen may not provide adequate protection against some forms of skin cancer, such as BCC.[25]

However, it may prove challenging to convince workplaces to adopt sun-safety policies and practices without these being monitored as specific health and safety requirements. This is because the lack of such provision does not result in an immediate catastrophic event, given the long latency period required for skin cancers to develop.

Incentives

Q15 How effective are existing financial and non-financial incentives in improving workplace health and safety outcomes?

In New Zealand a tax rebate is available to employers who provide sun-protective items directly related to outdoor work, such as hats and sunscreen.[23] However, it is not clear how widely this is known among employers, so explicit promotion of this information may substantially assist workers' sun protection.

In Victoria, Australia the Australian Council of Trade Unions and the Victorian Trades Hall Council issued an occupational health and safety standard on UVR hazards in 1989. It is now commonplace in Victoria for larger employers to provide their outdoor workers with protective items such as sunscreen, hats, sunglasses and protective clothing.[11]

Q16 How could incentives be better used to improve workplace health and safety outcomes?

See above.

Influencing health and safety outcomes beyond one's own workplace

Q17 How successful are government, industry, corporate or other potentially influential bodies in influencing health and safety outcomes beyond their own workplaces (for example through influencing their suppliers, counterparts, and competitors?

Other than minimal 'awareness raising', which is likely to have had a very limited effect on worker's actual sun protective practices,[39] there has been very little focus on the issue of occupational skin cancer at any organisational level in NZ. The scope for improving this situation is great.

Q18 What could be done to get government, industry, corporate or other potentially influential bodies to exert greater influence on improving workplace health and safety outcomes beyond their own workplaces?

There is a need for action at higher organisational levels. Importantly, there seems to be a lack of any monitoring of sun protection policies and practices in the workplace and little encouragement to comply with long-standing recommendations.

Major hazards

Q19 How strong is New Zealand's current approach to regulating major hazards?

The current approach to controlling harmful occupational UVR exposure is weak. The interpretation of risk is complicated by the lack of any defined, practical exposure limit recommendations for NZ. In general terms, existing NZ UVR exposure guidelines are appropriate, but lack high profile promotion, any widespread and consistent implementation or appropriate and effective monitoring.

Q20 What improvements to the regulation of major hazards would lead to better workplace health and safety outcomes?

Although there are notable exceptions, the NZ approach to occupational UVR exposure tends, in many workplaces, to be no more than a gesture. In our published study of outdoor workers in the agricultural, construction and road maintenance industries we found that sun protection was not a workplace priority. A scale which included provision of a sun protection policy, sun protection products and equipment, rescheduling of work tasks and sun safety training indicated a very poor performance with a mean score of only 3.5 out of a potential total of 14. This was similar across the three industries measured.[19] Recent research with nine occupational groups confirms that sun-protection among outdoor workers remains poor.[39] The first major obstacle to reducing workplace UVR exposure is for employers to acknowledge that it

is an identified hazard and that there are obligations under the NZ Health and Safety legislation to mitigate exposure.[20] Given the large proportion of workers potentially affected (approx. 14% of the workforce), its known preventability and the social and economic burden of treatment, the lack of prioritisation of occupational skin cancer prevention is surprising.

Health and hazardous substances

Q21 What are the most significant challenges to managing occupational health risks and exposure to hazardous substances?

The impact of UVR exposure is influenced by a number of factors. Factors in the physical environment include time of day, altitude, latitude, weather conditions and the reflection off surfaces, such as snow and water.[53; 25] While challenging to manage, potential remedial strategies are available – such as the provision of appropriate protective equipment, rescheduling work to different times of day to avoid the period of highest UVR, or 'cycling' high exposure tasks between workers. Social and personal challenges include lack of awareness of the risks and of a workplace culture supportive of sun protective practices. The drafting of workplace sun-protective policies and documentation of practices may be a useful start as they are indicative of intentions.

Q22 What changes could be made to the existing workplace health and safety framework to reduce the harm caused by occupational disease and ill-health?

There is a need to raise the profile of harmful, excessive occupational UVR exposure; increase workplace expectations that action is required and practices will be monitored; explore incentives and disincentives that may affect compliance.

Small to medium sized enterprises

Q23. What workplace health and safety challenges are specific to the self-employed and small to medium enterprises?

It may be more onerous for self-employed and smaller enterprises to develop and implement protective policies and practices, however many outdoor workers (such as farmers) are employed in these types of enterprises. There is some evidence that the sun protection practices of NZ workers in agriculture, for example, are not good.[39] In an Australian national survey of occupational exposure to sunlight, the odds of workers wearing hats was 67% lower in workplaces which employed less than 5 workers, 65% lower in workplaces with 5-19 employees and 48% lower in workplaces with 20-199 employees when compared with larger workplaces.[44]

Q24 What improvements could be made to the workplace health and safety framework, and its implantation, to ensure that it's effective for self-employed and small-to-medium sized enterprises?

A facilitative approach would probably assist best, with workplace policy and practice templates developed and promoted in the first instance, followed by random monitoring.

Measurement and data

Q25. To what extent are New Zealand's workplace injury and occupational disease data collection mechanisms conductive to robust monitoring, investigation and comparative analysis?

The poor occupational data collection mechanisms in current use in NZ make it very difficult to monitor, investigate or carry out comparative analysis of occupational skin cancers. There is no systematic reporting or monitoring of occupational skin cancer in NZ. The Cancer Registry only routinely records the incidence and mortality of CMM (not NMSC), but occupational history is often not recorded. Better monitoring and recording of skin cancer cases, by occupation, is required.

Q26 What opportunities are there for improving data collection, integration and reporting?

There is a need to collate pathology laboratory and DHB records of NMSC and to ensure that occupational history (not just current occupation) is routinely recorded. Outdoor workers could receive regular skin checks and these data could be collated and reported by age, sex and occupational group.

Our national culture and societal expectations

Q27. Do you think New Zealand culture influences our workplace health and safety outcomes?

Among the NZ population there remains a tendency towards what are popularly known as 'she'll be right' attitudes, which include a nonchalant approach towards rational and evidence-based workplace health and safety practices. Our own research has documented these tendencies among outdoor workers with respect to attitudes towards workplace sun protective practices.[30] However, we also found that NZ workers' personal sun protection knowledge and attitudes were not statistically significantly associated with their reported sun protective practices at work, whereas workers' perceptions regarding workplace sun-safety cultural expectations and workplace provision of sun protective equipment were strong predictors of sun protective practices.[19; 39] Therefore, it may be expected that the establishment of a sun-protective workplace culture has a good likelihood of influencing workers' personal sun-protective practices.

Q28 What might we do to improve our culture relating to workplace health and safety?

The research findings (Q27, above) suggest that relatively greater leverage for positive change may be achieved through working at the workplace and higher organisational levels (e.g. with unions, employers' associations, government agencies), compared with attempting to directly influence knowledge and attitudes at the level of individual workers. However, in some quarters there seems to be resistance against reasonable expectations to meet occupational standards. Role modelling at the management level make a positive contribution. A cultural shift in attitudes is required to help achieve positive gains for sun protective practices at work. International research suggests that a comprehensive approach, involving all those implicated at all organisational levels, is most likely to have a sustained impact on outcomes.[14] Any interventions will also need to take into account the dominance of males (generally considered less ready than females to take preventive health action) among outdoor workers, and that many of the largely outdoor occupations (particularly those with a transient workforce) have relatively low socio-economic status and employ many with poor educational qualifications.

Other factors

Q29 Are there any other factors that influence workplace health and safety outcomes in NZ?

No specific response.

Q30 Do you have any other suggestions for how to improve workplace health and safety outcomes in NZ?

No specific response.

Q31 Are there any other comments that you would like to make?

As demonstrated by the title of this submission ("Time to get serious about skin cancer prevention", which refers to a recent paper published in a US epidemiology journal), addressing skin cancer is considered to be a largely over-looked health priority. It should be even more of a prevention priority in NZ than the US, given that NZ melamona rates are substantially higher and, by extrapolation, our likely NMSC rates. That most skin cancers could potentially be prevented through the use of appropriate sun protective practices increases the value of paying attention to primary prevention – and outdoor occupational settings should be an identified target for change.

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