

## Your name, email address, phone number and organisation

Name:

Email address:

Phone number:

Organisation:

## Seeking proposals for additions to the list of occupational diseases under the Accident Compensation Act 2001

1. Do you think there is relevant evidence to support including new occupational diseases to Schedule 2 at this time?  
 Yes       No       Not Sure
2. If yes to Question 1, what occupational diseases should be added to Schedule 2?  
Skin cancer - melanoma, skin cancer  
Skin cancer - keratinocytic (KC) sometimes referred to as non-melanoma skin cancers including basal cell carcinoma (BCC) and squamous cell carcinoma (SCC)  
Skin cancer- rarer malignancies of the skin such as angiosarcoma
3. For each occupational disease suggested in response to Question 2, what should be listed as the corresponding:
  - a. agents, dusts, compounds, substances, radiation or things, and
  - b. if appropriate, the relevant level or extent of exposure to these; or
  - c. occupations, industries, or processes?

### **Agent: Solar ultraviolet radiation (UVA and UVB).**

There is strong evidence that solar ultraviolet radiation (UVR) causes skin cancer in humans. Solar UVR is classified as a type 1 carcinogen.<sup>1,2</sup> Over exposure of solar UVR causes both malignant melanoma and keratinocytic (KC) cancers of the skin.<sup>1,2</sup> There is also evidence linking an increased risk of melanoma with increasing number of sunburns.<sup>3</sup> There is limited evidence that solar UVR causes cancer in eyes and lips.<sup>4</sup>

In Australia where skin cancer rates are similar to Aotearoa/New Zealand (NZ), both melanoma and KC skin cancers were added to their occupational diseases register in 2021.<sup>5</sup> Several other countries also list KC skin cancer as an occupational disease where workers can claim compensation.<sup>6</sup> Solar UVR exposure is a recognised hazard by WorkSafe in NZ and guidelines to minimise the risk associated with this agent are provided in their 'Protecting Workers from Solar UV Radiation (January 2018)' publication.<sup>7</sup> Creating supportive work environments that protect people from exposure to excessive UV radiation is included in Te Aho o Te Kahu's cancer prevention report.<sup>8</sup>

Occupational Solar UVR exposure and skin cancer incidence and mortality is an emerging area of research. A recent systematic review of the research in this area was carried out

by the World Health Organisation and the International Labour Organisation.<sup>9</sup> It concluded that there is sufficient evidence of harmfulness that occupational solar UVR causes keratinocytic skin cancers. There is however 'an inadequate body of evidence' to assess if mortality is related to occupational exposure for this disease. With respect to melanoma incidence, there is 'limited evidence of harmfulness' and again an inadequate body of evidence to assess effect of mortality.<sup>9</sup>

For rarer subtypes of skin cancer such as angiosarcoma, there is a dearth of research available to assess the effect of occupational UVR exposure. Because of the strongly established mutagenic ability of UVR, the default assumption until proven otherwise should be that there is an association between UVR and these rarer malignancies of sun exposed skin.<sup>10</sup> To do otherwise is inequitable for those whose only fault is to be affected by a rare malignancy.

### **Exposure level**

The UVR damage to unprotected skin caused by overexposure builds up over the life span and is irreversible. There are several biologically distinct skin cancers each influenced by different UVR exposure patterns. We also know that some exposure is important for vitamin D production in the skin although the optimal level remains elusive. In terms of harm there are limits for artificial sources of UV radiation in the workplace.<sup>11</sup> It is important to note that exposure limits set for artificial UVR are typically exceeded within 5 to 10 minutes in summer by solar radiation for 2 to 3 hours either side of solar noon at 0 to 40 degrees latitude.<sup>11</sup> It is therefore impractical to set similar exposure limits for solar UVR exposure.

As a general guide, the Australian Radiation and Nuclear Safety Agency estimates 1 standard erythemal dose (SED) per day (where 1 SED equals 100J/m<sup>2</sup>) to be a safe level of exposure for most people.<sup>12</sup> A SED is the internationally recognised standard measure of erythemogenic UVR. A range of 1.5-3 SED is the dose typically required to produce visible damage for individuals with light coloured skin as indicated by the first sign of skin reddening 24 hours after exposure.<sup>13</sup>

The quantification of human solar UVR exposure in the workplace is challenging and as a result there is limited research. One study used electronic data logger dosimeters on a variety of outdoor workers to measure real time UVR exposure.<sup>14</sup> It showed that individuals with light coloured skin who spend two or more hours working outdoors daily throughout the year were at increased risk of developing KC.<sup>14</sup>

In the New Zealand context, it is important to note that many parts of the country experience high levels of ambient UVR as expressed by the UV index (UVI). The National Institute of Water and Atmospheric Research have provided ten years of UVI measures by Territorial Local Authority which show sustained high levels of ambient UVR from September through to April of any year (attached after references). The UVI is a measure of erythemally weighted UVR at the Earth's surface. General population advice recommends that sun protection is required when the UVI is 3 or above however sun protection is recommended when the UVI is 2 or above when people (such as outdoor workers) are exposed to the sun for extended periods.<sup>15</sup> This is because lower UVI levels

over a longer period can cause skin damage at a similar level to exposure to higher UVI for shorter times.

### **Occupations**

People who work outdoors especially those who work outdoors for extended periods. The NZ Carcinogens Survey 2021 estimates that about 26.8% of NZ workers are likely to be exposed to solar UVR at work.<sup>16</sup> It reported that nearly 7% of NZ workers are considered to have high exposure (more than four hours of exposure per working day) which equates to about 190,400 workers. It also highlighted farmers and animal/horticultural workers to be occupational groups with high exposure.

4. Do you think there is relevant evidence to support including additional exposures for occupational diseases currently included in Schedule 2?

Radiation is already included in Schedule 2. We suggest that solar ultraviolet radiation be specified as a subcategory of this.

5. If yes to Question 4, for each relevant current occupational disease, what should be listed as the corresponding additional:
- a. agents, dusts, compounds, substances, radiation or things, and
  - b. if appropriate, the relevant level or extent of exposure to these; or
  - c. occupations, industries, or processes?

Please refer to the answers outlined in 3 a, b, and c

*If you have suggested including a new occupational disease or diseases, and/or additional exposures, please provide links and/or references to supporting evidence.*

Driscoll T. Deemed diseases in Australia . Safe Work Australia; 2021, Dec.<sup>5</sup> <https://www.safeworkaustralia.gov.au/doc/revised-list-deemed-diseases-australia>

Mathieu B, Bayan H, Ivan I, Bálint N, Maria N, Ann O, et al. The effect of occupational exposure to solar ultraviolet radiation on malignant skin melanoma and non-melanoma skin cancer: A systematic review and meta-analysis from the WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury. 2021. Report No.: 9240040838.<sup>9</sup>

Worksafe. New Zealand Carcinogens Survey 2021. Overview. 2023.<sup>16</sup>

*Where relevant, please include information on how the disease or diseases affect different populations, including impacts on different genders.*

NZ and Australia experience the highest age standardised incidence rates for melanoma in the world.<sup>17,18</sup> In 2021 there were 2859 registered new melanoma diagnoses in NZ.<sup>19</sup> Incidence rates increase with age and people with light coloured skin are most at risk.<sup>19</sup> Melanoma is substantially less common in our Māori and Pacifica communities (2021, 81 registrations and 9 registrations respectively) however median thickness at diagnosis is significantly higher which can lead to a poorer prognosis.<sup>19,20</sup> Males are over represented in the statistics with an age standardised registration rate for melanoma of 39.3 per 100,000

compared to females at 32.2 per 100,000 population.<sup>19</sup> Mortality is consistently higher in males than females with the mortality rate in men about double that of women.<sup>17</sup>

We know less about the incidence of KC skin cancers as they are not required to be notified to the Cancer Registry unless a death occurs. In 2018 there were 204 deaths from KC skin cancers.<sup>22</sup> Mortality rates for KC skin cancers are low in NZ where treatment is available but left untreated KC skin cancers can grow large over time, cause ulceration and significant disfigurement as well as death. Research in 2018 estimated about 90,000 New Zealanders would be diagnosed with at least one in situ or invasive KC.<sup>23</sup> Age standardised rates for Māori were lower than for non-Māori (51.0 /100,00 vs 786.1/100,000 population respectively).<sup>23</sup>

Along with the personal costs, substantial public healthcare resources are required to manage skin cancer. Treatment costs in the public sector are expected to grow to \$295M by 2025.<sup>24</sup> There is anecdotal evidence that people are however unable to always access treatment services for skin cancer in the public sector in a timely manner. Private health insurers in NZ report that a significant proportion of claims relate to skin cancer treatment raising issues of equity.<sup>25</sup>

Adding skin cancer to the list of occupational diseases would recognise the scientific evidence linking sun exposure to KC, melanoma skin cancer and rare skin cancers as a gradual process disease. It would also allow eligible outdoor workers a simpler pathway to AC cover. It may also have the benefit of raising the profile of skin cancer and the need for sun protection in the workplace. This follows the case in Australia where individuals sued their employer for compensation following a skin cancer diagnosis.<sup>26</sup> Currently 'only 1.7% of New Zealand workers surveyed for the 'Exposure to Carcinogens' report who spend more than four hours working outside were considered to have complete UV protection (full clothes, hat, sunscreen, and shade).'<sup>16</sup> Given that skin cancer is highly preventable, more NZ workers should routinely be protected from exposure to UVR.

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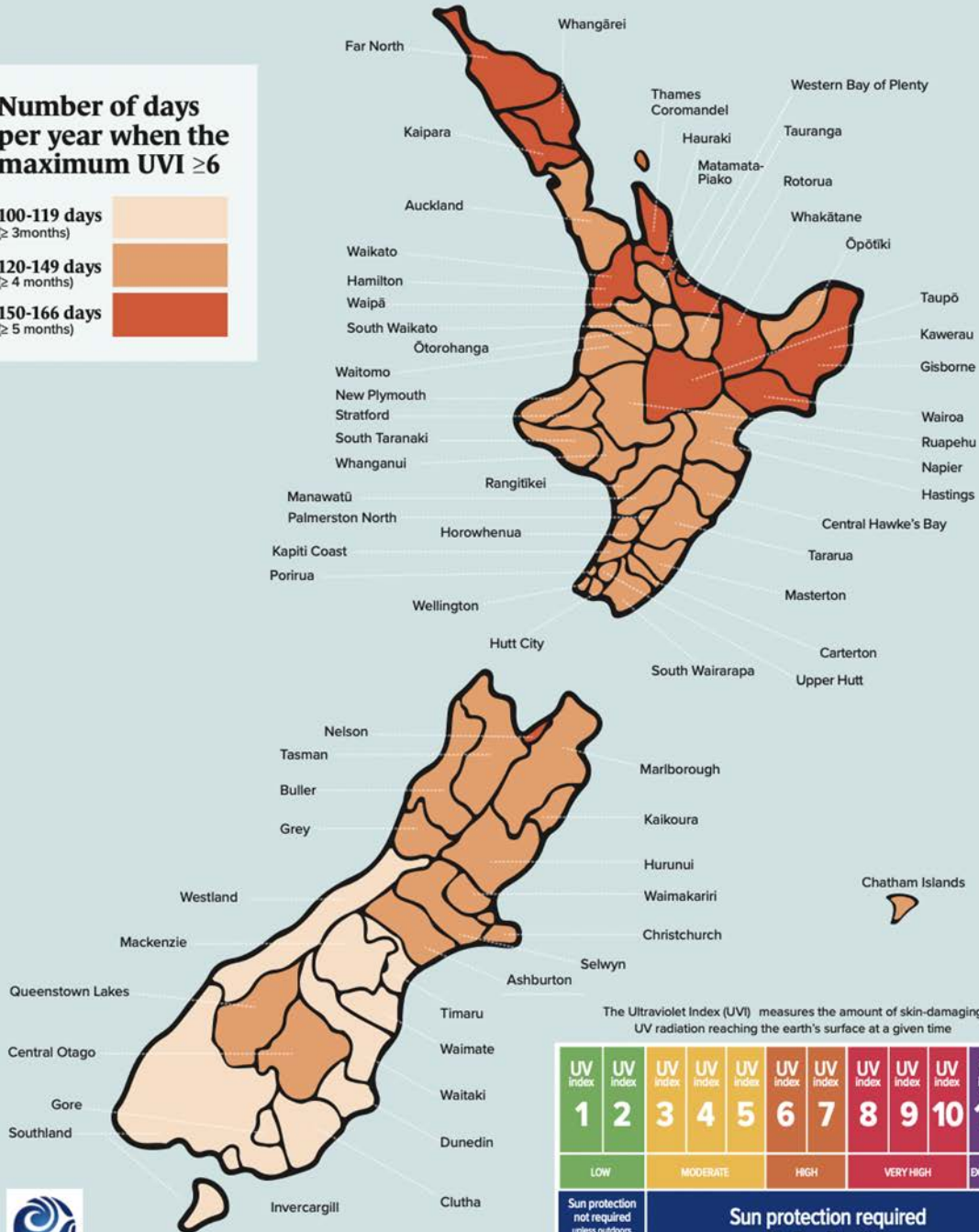
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# Number of days per year UVI was high ( $\geq 6$ ) by Council



All councils in Aotearoa experience high UV radiation in the summer months. New Zealanders need more shade in places they live, learn, work and play.

## Number of days per year when the maximum UVI $\geq 6$



The Ultraviolet Index (UVI) measures the amount of skin-damaging UV radiation reaching the earth's surface at a given time

UV index	UV index	UV index	UV index	UV index	UV index	UV index	UV index	UV index	UV index	UV index
1	2	3	4	5	6	7	8	9	10	11+
LOW		MODERATE			HIGH		VERY HIGH		EXTREME	
Sun protection not required unless outdoors for extended periods					Sun protection required Slip, Slop, Slap, Wrap					



UVI DATA PROVIDED BY BEN LILEY, ATMOSPHERIC SCIENTIST

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