

**Revocation and Determination**

of

**Statement of Principles**  
concerning

**SOLAR KERATOSIS**

for the purposes of the

*Veterans' Entitlements Act 1986*  
and

*Military Rehabilitation and Compensation Act 2004*

1. The Repatriation Medical Authority under subsection **196B(2)** and **(8)** of the *Veterans' Entitlements Act 1986* (the VEA):
  - (a) revokes Instrument No. 47 of 2001, as amended by Instrument No. 55 of 2001, concerning solar keratosis; and
  - (b) determines in their place the following Statement of Principles.

**Kind of injury, disease or death**

2.
  - (a) This Statement of Principles is about **solar keratosis** and **death from solar keratosis**.
  - (b) For the purposes of this Statement of Principles, "**solar keratosis**" also known as "actinic keratosis", means a hyperkeratotic neoplasm of the sun-exposed skin, excluding Bowen's disease. Characteristic features are of atypia of the basal to mid-level keratinocytes, parakeratin elaboration giving a scaly appearance, and solar elastosis in the dermis.
  - (c) Solar keratosis attracts ICD-10-AM code L57.0.
  - (d) In the application of this Statement of Principles, the definition of "**solar keratosis**" is that given at paragraph 2(b) above.

**Basis for determining the factors**

3. The Repatriation Medical Authority is of the view that there is sound medical-scientific evidence that indicates that **solar keratosis** and **death**

**from solar keratosis** can be related to relevant service rendered by veterans, members of Peacekeeping Forces, or members of the Forces under the VEA, or members under the *Military Rehabilitation and Compensation Act 2004* (the MRCA).

**Factors that must be related to service**

4. Subject to clause 6, at least one of the factors set out in clause 5 must be related to the relevant service rendered by the person.

**Factors**

5. The factor that must as a minimum exist before it can be said that a reasonable hypothesis has been raised connecting **solar keratosis** or **death from solar keratosis** with the circumstances of a person's relevant service is:
- (a) being a prisoner of war of Japan before the clinical onset of solar keratosis; or
  - (b) having a solar UV exposure factor ratio of at least 1.1 for the affected area at the time of the clinical onset of solar keratosis; or
  - (c) having sunlight exposure to unprotected skin at the affected site for at least 2250 hours while in a tropical area, or having equivalent sunlight exposure in other latitude zones, before the clinical onset of solar keratosis; or
  - (d) being treated with immunosuppressive drugs for a continuous period of twelve weeks before the clinical onset of solar keratosis; or
  - (e) undergoing PUVA therapy involving the affected site where:
    - (i) the first PUVA treatment commenced at least five years before, and
    - (ii) at least twenty-five PUVA treatments were administered,before the clinical onset of solar keratosis; or
  - (f) having cutaneous contact of the affected site with bipyridyl compounds associated with paraquat manufacture, on more days than not for a cumulative period of at least five years, before the clinical onset of solar keratosis; or

- (g) inability to obtain appropriate clinical management for solar keratosis.

**Factors that apply only to material contribution or aggravation**

- 6. Paragraph 5(g) applies only to material contribution to, or aggravation of, solar keratosis where the person’s solar keratosis was suffered or contracted before or during (but not arising out of) the person’s relevant service.

**Inclusion of Statements of Principles**

- 7. In this Statement of Principles if a relevant factor applies and that factor includes an injury or disease in respect of which there is a Statement of Principles then the factors in that last mentioned Statement of Principles apply in accordance with the terms of that Statement of Principles.

**Other definitions**

- 8. For the purposes of this Statement of Principles:

“**a tropical area**” means any area between the Tropic of Capricorn (23° 27' South) and the Tropic of Cancer (23° 27' North);

“**death from solar keratosis**” in relation to a person includes death from a terminal event or condition that was contributed to by the person’s solar keratosis;

“**equivalent sunlight exposure in other latitude zones**” means the cumulative hours of sunlight exposure equivalent to that specified for a tropical area, calculated by multiplying the hours of exposure in each latitude zone by the latitude weighting factor for the zone as per the latitude weighting factor schedule and adding together the result for each zone:

<u>Latitude weighting factor schedule</u>	
<u>Latitude zone</u>	<u>latitude weighting factor</u>
a latitude between 23° 27' S and 23° 27' N	1.0
a latitude from > 23° 27' to 35°	0.75
a latitude from > 35° to 45°	0.5
a latitude from > 45° to 65°	0.25;

“**ICD-10-AM code**” means a number assigned to a particular kind of injury or disease in The International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM), Fourth Edition, effective date of

1 July 2004, copyrighted by the National Centre for Classification in Health, Sydney, NSW, and having ISBN 1 86487 594 1;

**“immunosuppressive drugs”** means drugs or agents administered orally, intravenously or intramuscularly for the purpose of suppressing the immune responses, but does not include inhaled or topical steroids;

**“paraquat”** is a dipyridilium compound whose dichloride and dimethylsulphate salts are used as contact herbicides;

**“PUVA”** means photochemotherapy with oral methoxsalen (psoralen) and ultraviolet A radiation;

**“relevant service”** means:

- (a) operational service under the VEA; or
- (b) peacekeeping service under the VEA; or
- (c) hazardous service under the VEA; or
- (d) warlike service under the MRCA; or
- (e) non-warlike service under the MRCA;

**“solar UV exposure factor ratio”** means the value obtained by applying the solar UV exposure factor ratio formula;

**“solar UV exposure factor ratio formula”** means:

$$\frac{\text{total lifetime UV exposure factor}}{\text{non-service UV exposure factor}}$$

where:

**“total lifetime UV exposure factor”** means the numerical value calculated by the formula:

$$[\text{MED}_{\text{cum}}(a,T)]^{\beta-1} \cdot \sum_{t=0}^T \text{PAE}(n,M,a) \text{ at age } (T-t) \cdot t^{\alpha-\beta}$$

for the person’s lifetime to the time of the clinical onset of solar keratosis; and

**“non-service UV exposure factor”** means the numerical value calculated by the formula:

$$[\text{MED cum (a,T)}] \beta^{-1} \cdot \sum_{t=0}^T \text{PAE (n,M,a) at age (T-t)} \cdot t^{\alpha-\beta}$$

for the person's lifetime to the time of the clinical onset of solar keratosis, with the PAE for each month of the person's period or periods of relevant service being the arithmetic mean of the PAE for each and every month of the person's life, other than the period or periods of relevant service, where:

**“α”** has the value of five and is a numerical constant associated with the age dependence of the cumulative incidence;

**“β”** has the value of two and is a biological amplification factor;

**“a”** is an anatomical body site;

**“M”** is a specified month of the year;

**“MED”** means minimal erythemal dose, where one MED is equal to 200 Joules of radiation per square metre of skin;

**“[MED cum (a,T)]”** is the cumulative solar UV dose to the skin for any given anatomical body site for the person's age at the time of the clinical onset of solar keratosis;

**“n”** has the value specified in column 2 of Table 1 opposite the item in column 1 of that Table for each of the specified life activities set out in column 1:

**Table 1—specified life activities**

column 1	column 2
Service workday (n <sub>1</sub> )	1
Service weekend (n <sub>2</sub> )	2
Service recreation period one (n <sub>3</sub> )	3
Service recreation period two (n <sub>4</sub> )	4
Civilian workday (n <sub>5</sub> )	5
Civilian weekend (n <sub>6</sub> )	6
Civilian recreation period one (n <sub>7</sub> )	7
Civilian recreation period two (n <sub>8</sub> )	8

**“PAE”** means personal ambient exposure in MEDs, calculated for each and every month of a person's life to the time of the clinical onset of solar keratosis based on an estimate of a typical month during each of the five year periods between the ages of 0 and 20 years and each of the ten year periods thereafter;

**“PAE (n,M,a)”** means the number calculated by the formula:

n<sub>8</sub>

$$\sum_{n_1} MAE (M,L_n) \cdot ABF_a \cdot EF_n \cdot TRF_n \cdot ESF_n \cdot CPF_n \cdot ERF_n \cdot W_n$$

where:

**“ABF<sub>a</sub>”** is the anatomical body factor, and has the value specified in column 2 of Table 2 opposite the item in column 1 of that Table for each of the various body sites set out in column 1:

**Table 2—body sites**

column 1	column 2
Face	0.15
Hand	0.25
Leg	0.25
Arm	0.40
Back	0.50

**“CPF<sub>n</sub>”** is the clothing protection factor, and has the value assigned to a particular anatomical site proportionately according to the amount of protection provided by clothing and sun screen, ranging from a value of 1.00 for no protection to a value of 0.05 for full cover with heavy clothing for a given specified life activity in column 1 of Table 1;

**“EF<sub>n</sub>”** is the exposure factor, and has the value specified in column 2 of Table 3 opposite the item in column 1 of that Table for different exposure situations set out in column 1:

**Table 3—exposure situations**

column 1	column 2
Indoor	0.10
Mainly indoor	0.20
Indoor and outdoor	0.35
Mainly outdoor	0.50
Outdoor	0.60

**“ERF<sub>n</sub>”** is the environment reflectance factor, and has the value specified in column 2 of Table 4 opposite the item in column 1 of that Table for the different environment types set out in column 1:

**Table 4—environment types**

column 1	column 2
Urban	0.95
Rural	1.00
Maritime	1.00

where:

**“Urban”** means a location that is either a city or a town;

**“Rural”** means a location that is bushland, pastoral, or agricultural setting;

**“Maritime”** means either on the sea, lake, major river, or directly adjacent to such a body of water;

**“ESF<sub>n</sub>”** is the environment shade factor, and has the value specified in column 2 of Table 5 opposite the item in column 1 of that Table for the different environment shade types set out in column 1:

**Table 5—environment shade types**

column 1	column 2
Dense shade	0.50
Moderate shade	0.70
Light shade	0.90
No shade	1.00

where:

**“Dense shade”** means a location that is predominantly under dense shade, such as jungle or dense forest;

**“Moderate shade”** means a location that is predominantly under moderate shade, such as open forest or high density housing;

**“Light shade”** means a location that is predominantly under light shade, such as lightly timbered country or low density housing;

**“No shade”** means a location that is predominantly without shade, such as open fields, tundra, beach, or ocean;

**“MAE(M,L<sub>n</sub>)”** is the average daily ambient exposure for month, M, in location, L, assuming a long term average cloud cover, being the value, obtained from the Table set out in Schedule 1, that is contained in the row that corresponds to the particular latitude (rounded to the nearest five degrees) and is contained in the column that corresponds to the month of the

year that is the particular month under consideration, for each specified life activity;

**“TRF<sub>n</sub>”** is the terrain reflectance factor, and has the value specified in column 2 of Table 6 opposite the item in column 1 of that Table for the different terrain types set out in column 1:

**Table 6—terrain types**

column 1	column 2
Brown	1.02
Black	1.04
Green	1.05
Open water	1.08
Sand	1.16
Snow	1.40

where:

**“Black”** means a terrain predominantly of black material such as asphalt;

**“Brown”** means a terrain predominantly of bare soil, clay, or buildings;

**“Green”** means a terrain predominantly of green vegetation;

**“Open Water”** means an environment surrounded by water;

**“Sand”** means a terrain predominantly of light material such as white or yellow sand;

**“Snow”** means a terrain that is predominantly covered in snow;

**“W<sub>n</sub>”** is an estimate of the number of days in a month in which a specified life activity in column 1 of Table 1 is performed, and where, for the purposes of this definition, every month is taken to have 30.4375 days;

**“t”** is the age in months of the person for the particular specified activity;

**“T”** is the age in months of the person at the time of clinical onset of solar keratosis;

**“terminal event”** means the proximate or ultimate cause of death and includes:

- (a) pneumonia;



- (b) respiratory failure;
- (c) cardiac arrest;
- (d) circulatory failure; or
- (e) cessation of brain function.

**“unprotected skin”** means skin that is directly exposed to the sun and is not protected by sunscreen, clothing or any other physical barrier;

**Application**

- 9. This Instrument applies to all matters to which section 120A of the VEA or section 338 of the MRCA applies.

**Date of effect**

- 10. This Instrument takes effect from 9 March 2005.

Dated this *twenty-fourth* day of *February* 2005

The Common Seal of the )  
Repatriation Medical Authority )  
was affixed to this instrument )  
in the presence of: )

KEN DONALD  
CHAIRMAN

**Schedule 1**

**Average daily MED calculated for the given month and latitude  
Data assumes long-term average cloud cover**

Latitude	January	February	March	April	May	June	July	August	September	October	November	December
85°N	0.00	0.10	0.10	0.10	0.10	1.00	1.00	0.10	0.10	0.10	0.10	0.00
80°N	0.00	0.10	0.20	1.00	2.00	3.00	3.00	2.00	0.50	0.10	0.10	0.00
75°N	0.00	0.10	0.50	2.00	3.00	5.00	5.00	3.00	1.00	0.20	0.10	0.00
70°N	0.00	0.21	0.90	2.95	5.81	7.83	8.01	5.17	1.97	0.44	0.07	0.00
65°N	0.21	0.62	1.66	4.13	7.06	9.42	9.49	6.72	3.11	1.08	0.35	0.18
60°N	0.41	1.03	2.42	5.30	8.32	11.11	11.05	8.38	4.28	1.72	0.60	0.35
55°N	0.62	1.44	3.18	6.48	9.94	12.71	12.71	10.14	5.76	2.61	0.90	0.53
50°N	0.82	1.85	3.95	7.66	11.66	14.37	14.46	12.01	7.37	3.64	1.22	0.71
45°N	1.97	3.46	5.97	9.67	13.35	16.25	15.98	14.68	9.69	5.62	2.67	1.79
40°N	3.12	5.06	7.99	11.68	15.03	18.24	17.51	17.60	12.15	7.66	4.28	2.87
35°N	4.51	7.00	10.45	14.18	17.56	20.58	19.72	19.54	14.74	9.94	6.00	4.24
30°N	6.03	9.10	13.07	16.81	20.25	23.07	22.03	21.48	17.48	12.35	7.86	5.76
25°N	8.86	12.36	16.41	19.68	22.04	22.89	21.58	21.17	18.59	14.74	10.39	8.38
20°N	11.77	15.73	19.91	22.69	23.88	22.68	21.10	20.72	19.57	17.14	12.91	11.01
15°N	14.02	17.69	20.55	21.94	21.88	19.98	19.14	19.27	18.72	17.51	14.81	13.06
10°N	16.07	19.41	20.93	21.04	19.83	17.38	17.26	17.81	17.65	17.47	16.35	14.87
5°N	17.89	19.98	20.28	19.82	18.20	16.31	16.42	17.37	18.68	18.38	17.09	16.49
Equator	19.58	20.35	19.50	18.60	16.65	15.23	15.58	16.93	19.73	19.28	17.73	18.03
5°S	19.41	20.20	19.64	19.81	17.95	16.49	17.39	19.53	22.03	21.63	20.12	19.16
10°S	19.07	20.03	19.76	20.67	18.58	16.95	18.39	21.54	24.12	24.05	22.67	20.16
15°S	23.08	23.28	22.11	19.86	15.96	14.10	15.46	18.73	22.52	24.21	24.43	23.55
20°S	25.26	24.18	21.92	17.36	12.73	10.81	11.94	15.38	19.95	24.03	26.40	25.74
25°S	25.63	23.95	20.30	14.64	9.97	7.91	8.76	11.77	16.29	20.70	24.36	25.80
30°S	25.96	23.59	18.60	11.97	7.32	5.25	5.85	8.45	12.87	17.56	22.39	25.85
35°S	22.99	20.31	15.45	9.42	5.53	3.99	4.38	6.46	10.23	14.48	19.13	22.54
40°S	20.18	17.23	12.51	7.06	3.90	2.80	3.05	4.66	7.82	11.66	16.13	19.45
45°S	17.42	14.15	9.57	5.00	2.62	1.79	2.00	3.29	5.90	9.57	13.77	16.92
50°S	15.74	12.14	7.43	3.18	1.30	0.75	0.90	1.87	4.15	7.68	12.20	15.53
55°S	14.16	10.46	6.08	2.49	1.00	0.57	0.67	1.46	3.40	6.68	10.87	13.99
60°S	12.57	8.78	4.74	1.80	0.69	0.38	0.45	1.04	2.64	5.68	9.53	12.45
65°S	10.98	7.09	3.39	1.11	0.38	0.19	0.22	0.62	1.89	4.68	8.20	10.92
70°S	9.40	5.41	2.05	0.42	0.08	0.00	0.00	0.21	1.14	3.68	6.86	9.38
75°S	6.00	3.00	1.00	0.20	0.10	0.00	0.00	0.10	1.00	2.50	4.00	5.00
80°S	3.00	1.50	0.50	0.10	0.10	0.00	0.00	0.00	0.50	1.50	1.50	2.00
85°S	1.00	0.50	0.10	0.10	0.10	0.00	0.00	0.00	0.10	1.00	1.00	2.00