Australian Government
Repatriation Medical Authority

Statement of Principles
concerning
ACUTE MYELOID LEUKAEMIA
(Reasonable Hypothesis)
(No. 21 of 2024)

The Repatriation Medical Authority determines the following Statement of Principles under subsection 196B(2) of the *Veterans' Entitlements Act 1986*.

Dated 22 February 2024.

The Common Seal of the
Repatriation Medical Authority
was affixed to this instrument
at the direction of:

Professor Terence Campbell AM
Chairperson

Contents

1 Name

This is the Statement of Principles concerning *acute myeloid leukaemia (Reasonable Hypothesis)* (No. 21 of 2024).

2 Commencement

This instrument commences on **26 March 2024**.

3 Authority

This instrument is made under subsection 196B(2) of the *Veterans' Entitlements Act 1986*.

4 Repeal

The Statement of Principles concerning acute myeloid leukaemia No. 71 of 2015 (Federal Register of Legislation No. F2015L00903) made under subsection 196B(2) of the VEA is repealed.

5 Application

This instrument applies to a claim to which section 120A of the VEA or section 338 of the *Military Rehabilitation and Compensation Act 2004* applies.

6 Definitions

The terms defined in the Schedule 1 - Dictionary have the meaning given when used in this instrument.

7 Kind of injury, disease or death to which this Statement of Principles relates

(1) This Statement of Principles is about acute myeloid leukaemia and death from acute myeloid leukaemia.

*Meaning of **acute myeloid leukaemia***

(2) For the purposes of this Statement of Principles, acute myeloid leukaemia:

(a) means a malignant neoplasm of the blood characterised by clonal proliferation of morphologically immature cells committed to the myeloid cell lineage, with an excess of myeloblasts in bone marrow, peripheral blood or other tissues; and

(b) includes:

(i) acute myeloid leukaemia with defining genetic abnormalities (for example, acute myeloid leukaemia with NPM1 mutation);

(ii) acute myeloid leukaemia, myelodysplasia-related genetic abnormalities;
(iii) acute myeloid leukaemia with minimal differentiation, or without maturation or with maturation;
(iv) acute myeloblastic leukaemia;
(v) acute promyelocytic leukaemia;
(vi) acute myelomonocytic leukaemia;
(vii) acute monoblastic/monocytic leukaemia;
(viii) acute erythroid leukaemia;
(ix) acute megakaryoblastic leukaemia;
(x) acute basophilic leukaemia;
(xi) acute panmyelosis with myelofibrosis;
(xii) myeloid sarcoma;
(xiii) acute myeloid leukaemia, not otherwise specified; and

(c) excludes:

(i) chronic myeloid leukaemia; and
(ii) myelodysplastic syndrome.

*Death from **acute myeloid leukaemia***

(3) For the purposes of this Statement of Principles, acute myeloid leukaemia, in relation to a person, includes death from a terminal event or condition that was contributed to by the person's acute myeloid leukaemia.

Note: ***terminal event*** is defined in the Schedule 1 – Dictionary.

8 Basis for determining the factors

The Repatriation Medical Authority is of the view that there is sound medical-scientific evidence that indicates that acute myeloid leukaemia and death from acute myeloid leukaemia 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 MRCA.

Note: ***MRCA***, ***relevant service*** and ***VEA*** are defined in the Schedule 1 – Dictionary.

9 Factors that must exist

At least one of the following factors must as a minimum exist before it can be said that a reasonable hypothesis has been raised connecting acute myeloid leukaemia or death from acute myeloid leukaemia with the circumstances of a person's relevant service:

(1) having smoked tobacco products:

(a) in an amount of at least 10 pack-years before clinical onset; and
(b) commencing at least 5 years before clinical onset; and

(c) if smoking has ceased before clinical onset, then that onset occurred within 15 years of cessation;

Note: ***one pack-year*** is defined in the Schedule 1 - Dictionary.

(2) having one of the following haematological disorders at the time of clinical onset:

(a) myelodysplastic syndrome;
(b) myelodysplastic/myeloproliferative neoplasm;
(c) aplastic anaemia; or
(d) paroxysmal nocturnal haemoglobinuria.

Note 1: ***myelodysplastic / myeloproliferative neoplasm*** is defined in the Schedule 1 - Dictionary.

Note 2: myelodysplastic syndrome is also known as myelodysplastic neoplasm.

(3) having one of the following myeloproliferative neoplasms at the time of the clinical onset of acute myeloid leukaemia:

(a) chronic myeloid leukaemia;
(b) essential thrombocythaemia;
(c) polycythaemia vera;
(d) primary myelofibrosis;
(e) chronic eosinophilic leukaemia;
(f) chronic neutrophilic leukaemia;
(g) juvenile myelomonocytic leukaemia; or
(h) myeloproliferative neoplasm, not otherwise specified.

(4) undergoing a course of treatment with one of the following drugs at least 6 months before clinical onset and if treatment has ceased before clinical onset, then that onset occurred within 20 years of cessation:

(a) alkylating agent;
(b) topoisomerase II inhibitor;
(c) azathioprine;
(d) platinum agents; or
(e) poly(ADP-ribose) polymerase inhibitors (PARP inhibitors).

Note: Examples of topoisomerase II inhibitors include etoposide, teniposide, mitozantrone (also known as mitoxantrone), daunorubicin, doxorubicin, epirubicin, and idarubicin. Examples of platinum agents include carboplatin, cisplatin, and oxaliplatin. Examples of PARP inhibitors include olaparib, rucaparib, niraparib, talazoparib and veliparib.

(5) having received a cumulative equivalent dose of at least 0.01 sievert of ionising radiation to the bone marrow at least one year before the clinical onset;

Note: ***cumulative equivalent dose*** is defined in the Schedule 1 - Dictionary.

(6) undergoing ablative treatment with radioactive iodine for cancer before clinical onset, where the first exposure occurred at least one year before clinical onset;

(7) undergoing ablative treatment with radioactive phosphorus for a myeloproliferative neoplasm before clinical onset, where the first exposure occurred at least one year before clinical onset;

(8) being exposed to benzene as specified:

(a) for a cumulative total of at least 1,250 hours within a continuous period of 5 years before clinical onset; and
(b) where the first exposure in that period occurred at least 2 years before clinical onset;

Note: ***being exposed to benzene as specified*** is defined in the Schedule 1 – Dictionary.

(9) inhaling, ingesting or having cutaneous contact with benzene:

(a) in an amount greater than 5 ppm-years of cumulative exposure before clinical onset; and
(b) where the first exposure occurred at least 2 years before clinical onset;

Note: ***ppm-years*** is defined in the Schedule 1 - Dictionary.

(10) being obese for at least 5 years within the 20 years before clinical onset;

Note: ***being obese*** is defined in the Schedule 1 - Dictionary.

(11) undergoing organ or haematopoietic stem cell transplantation, excluding corneal transplant, before the clinical onset;

(12) having infection with human immunodeficiency virus before clinical onset;

(13) inhaling formaldehyde:

(a) for a cumulative total of at least 5,000 hours within a continuous period of 10 years before the clinical onset of acute myeloid leukaemia; and
(b) where the first exposure in that period occurred at least 5 years before the clinical onset of acute myeloid leukaemia;

Note: ***inhaling formaldehyde*** is defined in the Schedule 1 – Dictionary.

(14) having one of the following autoimmune diseases before clinical onset:

(a) autoimmune haemolytic anaemia;
(b) giant cell arteritis;
(c) pernicious anaemia;
(d) polymyalgia rheumatica;
(e) rheumatoid arthritis;
(f) sarcoidosis;
(g) systemic lupus erythematosus;
(h) systemic vasculitis; or
(i) ulcerative colitis.

(15) inhaling, ingesting or having cutaneous contact with one of the following pesticides for a cumulative period of at least 1,000 hours before the clinical onset of acute myeloid leukaemia, where the first exposure occurred at least 5 years before clinical onset:

(a) aldrin;
(b) dieldrin;
(c) diazinon;
(d) chlordane; or
(e) heptachlor.

(16) inhaling styrene:

(a) for a cumulative total of at least 2,500 hours within a continuous period of 5 years before the clinical onset of acute myeloid leukaemia; and
(b) where the first exposure in that period occurred at least 5 years before the clinical onset of acute myeloid leukaemia;

Note 1: Inhalation of styrene can occur in the manufacture of fibreglass-reinforced plastic products, in the production of styrene, polystyrene, and styrene-based plastics and rubbers, and in the use of products containing styrene, such as paints, adhesives, metal cleaners, and varnishes.

Note 2: ***inhaling styrene*** is defined in the Schedule 1 - Dictionary.

(17) being exposed to styrene:

(a) in an amount greater than 10 ppm-years of cumulative exposure before the clinical onset of acute myeloid leukaemia; and
(b) where the first exposure occurred at least 5 years before the clinical onset of acute myeloid leukaemia;

Note: ***ppm-years*** is defined in the Schedule 1 - Dictionary

(18) inability to obtain appropriate clinical management for acute myeloid leukaemia before clinical worsening.

10 Relationship to service

(1) The existence in a person of any factor referred to in section 9, must be related to the relevant service rendered by the person.

(2) The factor set out in subsection 9(18) applies only to material contribution to, or aggravation of, acute myeloid leukaemia where the person's acute myeloid leukaemia was suffered or contracted before or during (but did not arise out of) the person's relevant service.

11 Factors referring to an injury or disease covered by another Statement of Principles

In this Statement of Principles:

(1) if a factor referred to in section 9 applies in relation to a person; and

(2) that factor refers to an injury or disease in respect of which a Statement of Principles has been determined under subsection 196B(2) of the VEA;

then the factors in that Statement of Principles apply in accordance with the terms of that Statement of Principles as in force from time to time.

Schedule 1 - Dictionary

Note: See Section 6

1 Definitions

In this instrument:

8-hour time-weighted average means the averaging of different exposure levels during an average exposure period equivalent to eight hours.

acute myeloid leukaemia—see subsection 7(2).

being exposed to benzene as specified means:

(a) having cutaneous contact with liquids containing benzene greater than 1% by volume; or
(b) ingesting liquids containing benzene greater than 1% by volume; or
(c) inhaling benzene vapour where such exposure occurs at an ambient 8-hour time-weighted average benzene concentration exceeding 5 parts per million.

Note: ***8-hour time-weighted average*** is defined in the Schedule 1 – Dictionary.

being obese means having a Body Mass Index (BMI) of 30 or greater.

Note: ***BMI*** is defined in the Schedule 1 – Dictionary.

BMI means $W/H^{2,}$ where:

(a) W is the person's weight in kilograms; and
(b) H is the person's height in metres.

cumulative equivalent dose means the total dose of ionising radiation received by the particular organ or tissue from external exposure, internal exposure or both, apart from normal background radiation exposure in Australia, calculated in accordance with the methodology set out in Guide to calculation of 'cumulative equivalent dose' for the purpose of applying ionising radiation factors contained in Statements of Principles determined under Part XIA of the Veterans' Entitlements Act 1986 (Cth), Australian Radiation Protection and Nuclear Safety Agency, as in force on 2 August 2017.

Note 1: Examples of circumstances that might lead to exposure to ionising radiation include being present during or subsequent to the testing or use of nuclear weapons, undergoing diagnostic or therapeutic medical procedures involving ionising radiation, and being a member of an aircrew, leading to increased levels of exposure to cosmic radiation.

Note 2: For the purpose of dose reconstruction, dose is calculated as an average over the mass of a specific tissue or organ. If a tissue is exposed to multiple sources of ionising radiation, the various dose estimates for each type of radiation must be combined.

inhaling formaldehyde means inhaling formaldehyde at an ambient 8-hour time-weighted average concentration greater than one part per million.

Note: ***8-hour time-weighted average*** is defined in the Schedule 1 - Dictionary.

inhaling styrene means inhaling styrene at an ambient 8-hour time-weighted average concentration greater than 20 parts per million.

Note: ***8-hour time-weighted average*** is defined in the Schedule 1 – Dictionary.

MRCA means the *Military Rehabilitation and Compensation Act 2004*.

myelodysplastic/myeloproliferative neoplasm means a myeloid neoplasm with clinical, laboratory and morphologic features that overlap myelodysplastic neoplasm and myeloproliferative neoplasm. It includes:

(a) chronic myelomonocytic leukaemia;
(b) myelodysplastic/myeloproliferative neoplasm with neutrophilia (previously atypical chronic myeloid leukaemia);
(c) myelodysplastic/myeloproliferative neoplasm with SF3B1 mutation and thrombocytosis;
(d) myelodysplastic/myeloproliferative neoplasm not otherwise specified (previously myelodysplastic/myeloproliferative neoplasm unclassifiable).

one pack-year means the amount of tobacco consumed in smoking 20 cigarettes per day for a period of 1 year, or an equivalent amount of tobacco products.

Note 1: An equivalent amount of tobacco products is 7,300 grams of smoking tobacco by weight, either in cigarettes, pipe tobacco or cigars, or a combination of same. For pipe tobacco, cigars or combinations of multiple tobacco types, 1 gram of tobacco is considered to be equal to one cigarette.

Note 2: Pack-years are calculated by dividing the number of cigarettes smoked per day by 20 and multiplying this number by the number of years the person has smoked. For example, smoking 10 cigarettes per day for 10 years is equal to 5 pack-years, and smoking 40 cigarettes per day for 10 years is equal to 20 pack-years.

ppm-years means parts per million multiplied by years of exposure.

relevant service means:

(a) operational service under the VEA;
(b) peacekeeping service under the VEA;
(c) hazardous service under the VEA;
(d) British nuclear test defence service under the VEA;
(e) warlike service under the MRCA; or
(f) non-warlike service under the MRCA.

Note: ***MRCA*** and ***VEA*** are defined in the Schedule 1 - Dictionary.

terminal event means the proximate or ultimate cause of death and includes the following:

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

VEA means the *Veterans' Entitlements Act 1986*.