

APPENDIX 1 – SUMMARY OF BOARD OF VETERANS APPEALS’ DECISIONS GRANTING SERVICE CONNECTION FOR AML AND MDS

1. **Citation No. 1527163, Docket No. 14-035222, at 2-3 (June 25, 2015)** (Board accepted, as probative, the medical experts’ opinions, including the opinion of Dr. Steven Gore, linking the veteran’s acute myeloid leukemia to his exposure to Agent Orange/benzene. The Board recognized one medical expert’s opinion noting three studies supporting a link and accepted medical experts’ opinions that “it is as likely as not that [the Veteran’s] AML was caused by his prior exposure to Agent Orange/benzene” and concluded that the veteran’s AML was etiologically related to in-service herbicide exposure during active service.)

2. **Citation No. 1605416, Docket No. 09-0133, at 2 (February 11, 2016)** (Board decision called an August, 2015 opinion from a Veterans Health Administration specialist, a Chief of the VA Laboratory, to be the most probative opinion of record, explaining that, “[a] Veteran’s exposure to AO while in Vietnam, ‘would allow him to accumulate TCDD in his fat with its release of benzene,’ that the TCDD would ‘eventually break down into molecules,’ and that the ‘relationship to the development of cancer is extensive with exposure to benzene in many cell lines including myelocyte.’”).

3. **Citation No. 1611351, Docket No. 12-13616, at 2 (March 21, 2016)** (Board accepted opinions of two VA medical examiners that “while acute myeloid leukemia was not a presumptive disorder for Agent Orange exposure, it is a similar disease to other presumptive disorder and is not precluded from being directly related to Agent Orange exposure” and “that the Veteran’s acute myelogenous leukemia was the result of his military service, to include presumed exposure to Agent Orange during his service in Vietnam.”)

4. **Citation No. 1616651, Docket No. 09-02895, at 2 (April 26, 2016)** (Board found private medical opinion by a physician specializing in hematology and oncology the most probative opinion of record that there is strong evidence that AML is related to Agent Orange exposure and noted that the opinion was “consistent with medical opinions discussed in other admittedly non-precedential Board decisions relating to a relationship between herbicide exposure and . . . AML.” Board did not accept opinion of a single VA examiner that the veteran’s AML was less likely as not related to his herbicide exposure in-service for various reasons including that the VA examiner specialized in geriatrics and omitted part of the dictionary definition of a benzene ring that suggests “at the very least, the presence of benzene derivatives in herbicides.”)

5. **Citation No. 1621842, Docket No. 13-30876, at 2-3 (June 1, 2016)** (Board accepted as persuasive contradicted private medical opinion from a radiation oncologist that “the Veteran’s myelodysplastic syndrome (MDS) was “as likely as not a result of Agent Orange exposure and that Agent Orange substantially or materially aided to his cause of death, as he died from complication from a procedure, and those complications would not have occurred without bone marrow dysfunction from MDS. . .” After reviewing all available medical literature, the private physician found that “the Veteran’s toxin exposure

during service more likely than not contributed to his development of MDS.” The private physician further opined that “the Veteran did not have overwhelming risk factors for MDS development in general, other than herbicide exposure” and “that the presumed diagnosis was MDS, but that MDS was primarily due to environmental exposure.” The Board stated that “[b]ased on his training, knowledge, and expertise, and medical research on which he relied to form his opinion, the physician provided sound reasoning for his opinion.”)

6. Citation No. 1627003, Docket No. 13-15404, at 2-3 (July 7, 2016) (Board accepted contradicted VA medical opinion, based on review of the veteran’s medical record and history, “that it was at least as likely as not that the myelodysplastic leukemia was caused by exposure to herbicides in Vietnam.” The Board pointed to the medical opinion’s notation “that myelodysplastic leukemias are secondary to prior environmental toxins, such as herbicides sprayed in Vietnam.”)

7. Citation No. 1640658, Docket No. 14-31395, at 2 (October 14, 2016) (Board called the medical expert opinions by Dr. Steven Gore and Dr. Thomas Patrick Duffy, who specialize in hematology and oncology, “providing a link between the Veteran’s AML and his exposure to Agent Orange” competent, credible and highly probative. These experts opined that, “based on scientific research, benzene (also known as ‘dibenzo’) is a chemical found in Agent Orange.” Board also accepted the veteran’s counsel’s citations to reliable publications indicating that benzene is a by-product of TCDD.)

8. Citation No. 1648542, Docket No. 14-35049, at 4 (December 30, 2016) (Board found, as supported by sound rationale, the opinions of veteran’s private treating physician, who specialized in oncology, that given the veteran’s “history and the fact that there is no history of leukemia in his family his exposure to Agent Orange [was] as likely as not to be the cause of his leukemia.”)

9. Citation No. 1703986, Docket No. 14-22434, at 2-3 (February 9, 2017) (Deceased veteran, who served in Vietnam, was diagnosed with myelodysplastic syndrome at 39 years of age and with acute myelogenous leukemia in 1986. Surviving spouse sought service connection for veteran’s acute myelogenous leukemia. In support, she “submitted a medical opinion pertaining to a different Veteran, indicating that exposure to Agent Orange during service in the Republic of Vietnam likely caused acute myelogenous leukemia.” This “opinion explained that exposure to benzene, a chemical agent of Agent Orange, is an accepted precursor of complex acute leukemia like acute myelogenous leukemia.” The Board noted that, “[i]ndeed, the Institute of Medicine of the National Academies’ most recent study Veterans and Agent Orange: Update 2012 states that benzene exposure is a risk factor for acute myelogenous leukemia (p. 625).” Surviving spouse also “submitted prior Board decisions, pertaining to different Veterans, which cited independent hematologist/oncologist opinions that in-service herbicide exposure caused acute myelogenous leukemia” and an opinion from a VHA hematology and oncology expert. This VA “expert explained that the Veteran’s in-service herbicide exposure was more significant than that of the Veterans in the submitted Board decisions” because “the other Veterans were exposed at sea, while the Veteran was exposed on land.” The VA expert further “explained that myelodysplastic syndromes (MDS) is a precursor to acute

myelogenous leukemia” and “opined that the unusually early onset of MDS suggested a relationship between the disorder and the Veteran’s in-service herbicide exposure.” Finally, the VA expert “noted that the submitted Board decisions referenced hematologist/oncologist opinions that related Agent Orange exposure to acute myelogenous leukemia” and “explained that one of the opinions was rendered by a world-renowned expert in acute myelogenous leukemia.” Based on the uncontroverted evidence, the Board granted service connection for the cause the veteran’s death.)

10. Citation No. 1704903, Docket No. 15-36933, at 2-3 (February 16, 2017) (Board found the opinions of a private physician, who spent ten years as a VA Compensation and pension examiner where he routinely provided opinions regarding the nexus between Agent Orange exposure and various conditions, and the veteran’s treating physician to be probative and credible. Veteran was originally diagnosed with myelodysplasia that evolved over time to AML. The private physician opined that: (1) “both myelodysplasia and [AML] are relatively rare malignant disorders and there are no risk factors to account for its occurrence in the Veteran other than his exposure to Agent Orange and the Benzene constituents within Agent Orange;” (2) “medical literature [] shows a correlation between exposure to Dioxin (found in Agent Orange) and later development of both myelodysplasia and [AML];” and (3) “the medical evidence and accepted medical literature demonstrate[s] a connection and causal relationship between Benzene exposure and [AML].” The veteran’s treating physician “opined that since there were no other known recognized risk factors to account for the Veteran’s development of his rare malignant disorder, the likelihood of the relationship between Agent Orange and the Veteran’s leukemia [was] enhanced.”)

11. Citation No. 1707892, Docket No. 13-15237, at 2 (March 16, 2017) (Board found as the most probative evidence of record the opinion of the deceased veteran’s private treating oncologist that exposure to herbicides during active service, like the veteran had experienced, “had been associated with the development of bone marrow problems, including but not limited to, acute leukemia.”)

12. Citation No. 1709226, Docket No. 17-13499, at 3 (March 24, 2017) (Board found the three medical opinions provided by the veteran’s treating physicians to be highly probative. One medical expert opined that “the literature provided with his opinion indicates that chemicals in Agent Orange cause myelodysplastic syndrome, which progresses into AML.” The expert was of the opinion that “[g]iven the relatively short time period between the Veteran’s development of myelodysplastic syndrome and his diagnosis of AML,” “the Veteran’s exposure to herbicide agents in service caused his myelodysplastic syndrome, which in turn, caused his AML.” These physicians opined, based on treatise evidence and the opinion provided by Dr. Thomas Patrick Duffy in a separate veteran’s case, that “the chemical benzene was an ingredient in Agent Orange and that benzene has been linked to the development of AML”, that the veteran’s AML with residual anemia was directly caused by or related to his toxic exposure to herbicide agents while in active service. The Board found that the treatise evidence and Dr. Duffy’s opinion bolstered the private treating physicians’ opinions.)

13. Citation Nos. 1713875 & 1713876, Docket No. 04-18316, at 3-4 (April 27, 2017) (These two decisions filed by siblings involve same deceased veteran and record evidence. Board found, in both cases, the medical opinion by a private physician, who was a Professor of Medicine (Hematology) and Director of Hematological Malignancies at Yale School of Medicine and practicing hematologist/oncologist, to have “greater probative weight than that of the November 2013 VA report” because “of the depth of the [private] physician’s expertise on the subject of leukemia and the thoroughness of his stated rationale.” The private physician “possessed an unusual degree of expertise on the subject of” AML from which the veteran died. The private physician explained that: (1) “leukemia, like other cancers, is the product of multiple genetic and environmental factors and that chemical exposure can be one of those environmental factors”; (2) “epidemiologic studies of an area in Italy contaminated with dioxin after an industrial accident [found that] deaths due to myeloid leukemia rose drastically in men exposed to dioxin 15 to 20 years after exposure”; (3) “a study [] found an excess of deaths due to leukemia in men responsible for mixing pesticides for Army Chemical Corps units in Vietnam between 1965 and 1971”; (4) the most recent update to “the IOM report cited in the November 2013 VA report found that adequate epidemiological studies of dioxin in the causation of myeloid malignancies were only beginning”; and (5) “the best of the existing epidemiological studies clearly showed an increased incidence of leukemia after dioxin exposure and that it was thus more likely than not that the Veteran’s leukemia was related to his exposure in Vietnam.”)

14. Citation No. 1714291, Docket No. 13-33696, at 3 (May 2, 2017) (Board found persuasive the medical opinion letter, based on supporting medical articles, from a board certified and residency trained occupational/environmental physician that the veterans’ death due to AML was caused by his exposure to Agent Orange and “multiple exposure to carcinogens during his military service.” The Board noted that the medical opinion letter also addressed the VA’s “contradictory opinion and the flawed rationale offered in support thereof.”)

15. Citation No. 1716015, Docket No. 12-35389, at 3-4 (May 11, 2017) (Board accepted, as more probative, the medical opinion of veteran’s private occupational/environmental physician, that veteran’s MDS was “caused by a combination of the effects of his chemotherapy for Agent Orange related lung cancer and the direct effect of Agent Orange on his hematopoietic system.” The Board noted that the physician’s detailed and rational opinion was “supported with several medical and scientific studies.”)

16. Citation No. 1723640, Docket No. 13-18719A, at 2 (June 22, 2017) (Board found as highly probative, as it contained a detailed rationale and was supported by pertinent medical and scientific literature, the opinion of private physician, who was a professor specializing in hematology and oncology and had a demonstrated knowledge of Agent Orange based on his work in the VA Health Service for 23 years, that the veteran’s death from AML was linked to in-service herbicide exposure. The private physician “explained that Agent Orange was contaminated with dioxin and that studies show an increased risk of AML in individuals exposed to dioxins, especially after 20 years with the highest incidence in men.” Based on two studies related to dioxin exposure, the private physician

“concluded that data show an increased risk of AML after herbicide exposure, especially those containing dioxin and to which the Veteran was exposed in service.”)

17. Citation No. 1734109, Docket No. 13-060427A, at 5 (August 21, 2017) (In granting service connection for MDS due to herbicide agent exposure, the Board found probative a medical opinion by a VA examiner which indicated that the veteran’s MDS was related to Agent Orange and the veterans’ acceptance to the Dana-Farber Cancer Institute Agent Orange MDS Veterans Study. This study states “that a known risk factor of contracting myelodysplastic syndrome is exposure to chemical benzene, to which medical literature” authored by a Dana-Farber Cancer Institute physician indicates “that Agent Orange was a toxic aromatic hydrocarbon (molecules with a benzene ring) which has a synthetic byproduct, called dioxin, which is a known carcinogen.”)

18. Citation No. 1739562, Docket No. 13-11976, at 3 (September 15, 2017) (Board found that record evidence was “at least in equipoise as to whether the Veteran’s [AML] was related to his active service.” Board discussed medical opinion from David P. Steensma, M.D., of the Adult Leukemia Program at the Dana-Faber Harvard Cancer Center, which linked the veteran’s AML with his in-service exposure to Agent Orange. The Board noted that Dr. Steensma’s opinion was based on the veteran’s medical records and pertinent medical literature and that the doctor “provided an extensive analysis and a well-reasoned rationale for his opinion.”)

19. Citation No. 1741500, Docket No. 13-06613A, at 2 (September 22, 2017) (Board accepted a private medical opinion providing a positive nexus between the veteran’s exposure to Agent Orange while serving in Vietnam and his MDS. The Board noted that the private physician provided a rational basis for his opinion based on the veteran’s medical history and medical literature.)

20. Citation No. 1749490, Docket No. 16-01482, at 3 (November 1, 2017) (Board accepted the medical opinion of VA examiner that there was a direct relationship between the veterans’ MDS and his in-service exposure to herbicide agents. As stated by the Board, the VA examiner “explained that myelodysplastic conditions were believed to be associated with herbicide exposure, and there had been several documented cases for the condition in an attempt to get the condition acknowledged by the VA as an associated illness.” The VA “examiner noted that the association of Agent Orange to myelodysplastic syndrome was accepted by the Heme Oncology community as verified on consultation with a Board Certified Heme-Oncology specialist.” The VA “examiner also cited another expert who explained the types of literature in support of the fact that myelodysplastic syndrome is associated with exposures to certain chemicals or toxins with benzenes and dioxins as the most frequently cited known exposure.” The VA examiner “further explained that myelodysplastic syndrome was relatively rare and might be much more considered as developing from an exposure to a toxin or environmental agent.” Finally, “the examiner opined that it was at least as likely as not that the Veteran’s myelodysplastic syndrome was caused by herbicide exposure during his service in Vietnam[,]” “[b]ecause of the relative rarity of myelodysplastic syndrome, and with known associations of Agent Orange to some more commonly identified leukemias/lymph proliferative diseases.”)

21. **Citation No. 1752612, Docket No. 14-06722, at 3 (November 16, 2017)** (Board found that service connection for veteran's death due to leukemia was warranted based on the only competent opinion of record by a private physician in favor of the claim. The private physician opined that the veteran's demise from AML, *inter alia*, was caused by his in-service exposure to herbicide agents and benzene. The doctor "explained that benzene is a well-established carcinogenic and causes AML, which ultimately caused the Veteran's death.")

22. **Citation No. 1758698, Docket No. 14-07706, at 2-3 (December 19, 2017)** (Board accepted only opinion of record by a private physician from the Mayo Clinic, who was board certified in Hematology and Transfusion Medicine, that linked the veteran's AML to in-service Agent Orange exposure. The private physician "concluded that the preponderance of the evidence supports that exposure to agent orange is a highly probable cause for the Veteran's acute leukemia, and, that it is more likely than not that the exposure to pesticides and solvents was causative in the development of the Veteran's myelodysplastic syndrome and his acute leukemia." The Board pointed out that "[a]s support, the physician cited case control studies that have repeatedly shown an increased risk of myelodysplastic syndrome in agricultural and petrochemical industry participants.")

23. **Citation No. 1804522, Docket No. 14-06 087 (Jan. 24, 2018)** (Board accepted opinion of a VA oncologist who treated a Vietnam veteran concluding that the veteran's death was caused by his acute myeloid leukemia and that the disability was due to his exposure to Agent Orange in service. The expert opined that "Agent Orange was produced with a substance that contains benzene, which is known to cause acute myeloid leukemia." The Board noted that the opinion was "accompanied by persuasive rationale which cite[d] to established medical principles and factual data." The Board acknowledged "the provider's expertise as an oncologist (a cancer specialist) and [found] the opinion to be the most probative evidence in [the] matter" and further noted that no contrary medical opinion had been rendered.)