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peripheral nerve status was not remarkable (AFHS, 1991). In 1992, the neurologic assessment was comparable between the two groups, and there was no consistent evidence of a dose–response relationship for either estimated initial TCDD or current TCDD. In 1997 (AFHS, 2000), the peripheral nerve examination was based on physical examinations and verified vibrotactile measurement. The percentage of participants with a confirmed polyneuropathy index was consistently higher in Ranch Hands than in the comparison group. After adjustment for the covariates, the results of TCDD exposure were marginally significant for the enlisted ground crew. The development of neuropathy 30 years after exposure is highly unusual and not compatible with TCDD exposure. It was concluded that evidence of an association between exposure to the chemicals of interest (2,4-D, 2,4,5-T or its contaminant TCDD, picloram, or cacodylic acid) and chronic persistent peripheral neuropathy was still inadequate or insufficient.

Update of the Scientific Literature

A publication relating serum TCDD and peripheral neuropathy from the 1982, 1985, 1987, 1992, and 1997 examinations of the Ranch Hand study (Michalek et al., 2001) found significantly increased risk of peripheral neuropathy among Ranch Hand veterans in the high-exposure category in 1997. Exposure categories and numbers of veterans in the "comparison," "background," "low," and "high" categories are described in Chapter 5. As part of the protocol, veterans received the diagnosis of "diabetic" if diagnosed by a physician as noted in the medical record or if a 2-hour postprandial glucose-tolerance test result was over 200 mg/dL. A neurologic examination recorded tremor, cranial nerve function, sensation, motor strength and coordination, and reflexes. In 1982, nerve-conduction studies of ulnar, peroneal, and sural nerves were performed. In 1992 and 1997, vibrotactile thresholds of the great toe were measured. The diagnosis of possible peripheral neuropathy required one of three physical signs: absent ankle jerk, abnormal vibration at the ankle, or abnormal pinprick in the foot bilaterally. For probable peripheral neuropathy, at least two of the three abnormalities had to be present. For a diagnosis of peripheral neuropathy, a diagnosis of probable peripheral neuropathy and bilateral abnormal vibrotactile measures were required.

Nerve-conduction studies (1982) and vibrotactile abnormalities (1992 and 1997) did not support any peripheral nerve differences between low and high exposure to TCDD. In the high-TCDD category in 1997, the odds of possible peripheral neuropathy (OR = 1.8, 95% CI 1.2 –2.7) or probable peripheral neuropathy (OR = 5.0, 95% CI 2.2–11.2) were significantly increased with a significant trend with increasing exposure ($p < 0.001$). To determine whether the OR was different in veterans with and without diabetes, the groups were analyzed separately. In nondiabetic veterans, the odds of probable peripheral neuropathy were significantly increased (OR = 8.7, 95% CI 1.9–39.3); and in diabetic veter-