CHAPTER 19

FUTURE DIRECTIONS

The development of a method to determine levels of dioxin in serum has been a significant enhancement to this study. This procedure permitted the study scientists to develop a measure of exposure for each individual that did not require making assumptions of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) exposure based on a surrogate indicator (developed from available historical data on fixed-wing spray missions used to disseminate Herbicide Orange, Herbicide Purple, Herbicide Pink, and Herbicide Green). The method provided the opportunity to move from relatively simple group contrasts of Ranch Hands and Comparisons to detailed analyses of dose response on an individual basis.

While this breakthrough has led to dramatic improvements in the study, it also has highlighted opportunities for further refinements to the study that will be implemented for the next phase of the study scheduled for 1992. These refinements in exposure assessment will include an evaluation of the pattern of dioxin isomers in the serum of a selected group of participants. These participants would include all Comparisons with 1987 TCDD levels above 20 ppt and a random sample of Ranch Hands. Additionally, serum samples will be collected for dioxin assays from all participants who did not provide blood for testing in 1987 or whose assays did not result in a valid determination in the laboratory. The Air Force also plans to obtain serum samples at the 1992 examination on a selected group of Ranch Hands so that a third data point will be available in the determination of dioxin half-life over the 10 years since 1982. These data, coupled with the results of half-life studies in men exposed to TCDD in Seveso, Italy, in 1976, will be used to assess the validity of the first-order pharmacokinetics assumption for dioxin elimination in humans.

Data on weight changes and intervening illness also will be included in half-life determinations for the 1992 examination. If the first-order elimination assumption is supported by the Seveso data, a specific half-life determination for each individual will be determined for use in the statistical analyses rather than the single value used for everyone in this report.

Modifications to the format of the physical examination also are envisioned for 1992. These include the determination of serum insulin levels, Doppler studies of peripheral arterial circulation, replacement of the T_3 % uptake with a refined methodology to measure the thyroid stimulating hormone accurately in both hyperthyroid and hypothyroid conditions, and the collection of data on the presence of claudication and peripheral vascular insufficiency. In addition, the components of the immunological assessment will be evaluated to ensure that the most current measures of immunological function are used.