Insufficient data are available to related nitrate deposition to short-term water quality effects. Therefore, we are unable to develop nitrate loading/response relationships.

The terrestrial mapping analysis for eastern Canada has demonstrated that the watersheds in which some surface waters have been observed to experience effects are representative, in terms of soil and geological characteristics, of larger areas of eastern Canada. The level of variability within terrain classes is not known.

An alkalinity map of the U.S. shows the location of regions where the mean alkalinity of most of the sampled surface waters is less than 200 μeg/L. There is reason to believe that some of these low alkalinity surface waters could experience effects similar to those noted in detailed study sites receiving similar total acidic deposition loadings. However, quantification of the number of lakes and rivers in both countries susceptible to acidification at specific loading rates would require validation of mapping methodologies and increased information on loading rates and the chemistry of lakes and streams. The present empirical evidence covers a broad spectrum of physical and climatological conditions across northeastern North America and therefore provides a basis on which to make only qualitative judgements regarding relationships between acidic loading rates and effects.

Based on the results of the empirical studies, interpretation of long-term water quality data and studies of sediment cores that have been reviewed, we conclude that acidic deposition has caused long- and short-term acidification of some low alkalinity surface waters in Canada and the U.S. Based on our understanding of the acidification process the Work Group concludes that reductions from present levels of total sulphur deposition would reduce further chemical and biological alterations to low alkalinity surface waters currently experiencing effects and would lead to eventual recovery of those waters that have been altered by deposition.

The U.S. members conclude that reductions in pH, loss of alkalinity, and associated biological changes have occurred in areas receiving acidic deposition, but cause and effects relationships have often not been clearly established. The relative contributions of acidic inputs from the atmosphere, land use changes, and natural terrestrial processes are not known. The key terrestrial processes which provide acidity to the aquatic systems and/or ameliorate atmospheric acidic inputs are neither known or quantified. The key chemical and biological processes which interact in aquatic ecosystems to determine the chemical environment are not known or quantified. Based on this status of the scientific knowledge, the U.S. Work Group concludes that it is not now possible to derive quantitative loading/effects relationships.