EVALUATING FORENSIC DNA MIXTURES UNDER DEPENDENCE:
NRC-II RECOMMENDATIONS 4.1 AND 4.2

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We consider the assessment of DNA profiles from samples containing a mixture of DNA from more than one person. The problem has been investigated in the context of likelihood ratios under the assumption of independent alleles (Hardy Weinberg equilibrium) in DNA profiles. However, uncertainty about independence may arise from a number of factors such as population substructure and relatedness. Taking this uncertainty into account, we develop general formulas for calculating the likelihood ratios for DNA mixtures under dependence. The single source formulas of the NRC-II Recommendations 4.1 and 4.2 are thus generalized to deal with mixed stains. The effect of dependence of alleles on the likelihood ratio estimates can be seen in the analysis of some real cases including the well-known Simpson case.