NOTE: All other errata have been corrected in the fourth printing of the second edition of *Water Chemistry* by Mark Benjamin.

Chapter 3	
p.128 Problem 19	*N*-nitrosodimethylamine [NDMA, with chemical formula $(CH_3)_2NN{=}O$] is a suspected carcinogen that can form via reactions between dimethylamine [DMA, $(CH_3)_2NH$] and dichloramine ($NHCl_2$). DMA is used in the production of many industrial chemicals and can enter water supplies as a contaminant in polymers that are used in water treatment; it is also present in human urine, so it can enter natural water bodies in wastewater discharges that have not been effectively treated biologically. $NHCl_2$ forms as a byproduct in water that is being disinfected with monochloramine (NH_2Cl), a process that has become increasingly popular because it disinfects the water with minimal formation of chlorinated disinfection byproducts (DBPs). Schreiber and Mitch[18] (2006) reported that the relevant elementary reactions and the corresponding rate constants for this reaction sequence are as shown below, where UDMH-Cl is an intermediate (chlorinated unsymmetrical dimethylhydrazine). **Reaction** — **Rate constant ($M^{-1}s^{-1}$)** $DMA + NHCl_2 \rightarrow UDMH\text{-}Cl + H^+ + Cl^-$ — $k_1 = 52$ $UDMH\text{-}Cl + O_2 \rightarrow NDMA + HOCl$ — $k_2 = 1.4$ $UDMH\text{-}Cl + NH_2Cl \rightarrow$ Other Products — $k_3 = 0.8$ Predict the concentrations of DMA, $NHCl_2$, UDMH-Cl, O_2 and NDMA as a function of time for two hours in a batch experiment with initial concentrations of 10^{-5} *M* DMA, 5×10^{-4} *M* $NHCl_2$, and 3×10^{-4} *M* O_2; initially, the solution contains none of the other species shown in the reactions. Explain the concentration trends qualitatively. [18] Schreiber, J.M., and Mitch, W.A. (2006) "Nitrosamine formation pathway revisited: The importance of chloramine speciation and dissolved oxygen." *Environ. Sci. Technol. 40*, 6007–6014.