High resolution laser spectra of rhodium monochloride (RhCl) have been acquired in the green and blue regions of the visible spectrum. The molecules were produced via laser ablation of a rhodium target rod, followed by reaction with trichloromethane in a pulsed supersonic jet. Several electronic transitions have been observed and analysed between 19,700 and 23,100 cm$^{-1}$. Two distinct lower state omega values have been determined: $\Omega = 3$ which is consistent with the $^2\Delta_g$ ground state observed for RhH and RhD$^+$, and $\Omega = 2$ which curiously enough seems to be the ground state of RhF. As of yet, which $\Omega$ value represents the ground state is unknown as transitions from either of these states seem equally intense. Dispersed fluorescence (DF) scans have been taken from a number of the observed excited states yielding an estimate of 350 $\pm$ 20 cm$^{-1}$ for a lower state vibrational frequency. The DF scans are also quite complicated indicating the presence of a number of low-lying states with energies less than 3200 cm$^{-1}$ above the ground state. Work on the RhCl molecule is continuing and results will be discussed.

$^a$W.J.Balfour, J. Cao, and C.X.W. Qian, J. Mol. Spectrosc. 201, 244(2000)

$^b$A.G. Adam, W.J. Balfour, R. Li, and S.A. Shepard, to be published