A SEARCH FOR HYDROXYLAMINE (NH_2OH) TOWARDS IRC+10216, ORION-S, ORION(KL), SGRB2(N), SGRB2(OH), W51M AND W3(IRS5)

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Over 50 molecular species containing nitrogen have been detected in the gas phase towards various astronomical environments. A number of chemical models have tried to reproduce the observed abundances of N-bearing species in the various environments of the ISM and CSM with limited success. Recently, there has been an interest in hydroxylamine (NH_2OH) because of its possible role in the formation of amino acids in space.[a,b] Implications of amino acid formation in space and detections of possible precursor species would have a profound impact on our pursuit of understanding the prebiotic molecular origins of life. However, hydroxylamine has yet to be detected in the gas phase in the interstellar medium. A recent gas-grain model by Garrod et al. (2008)[c] suggests that NH_2OH is formed through radical recombination on grain surfaces and predicts an abundance ratio range of NH_2OH/H_2 between $1.2x10^{-6}$ - $3.5x10^{-7}$; thus, suggesting that NH_2OH should be within the detectable limits of existing radio receivers. Here we present the search for hydroxylamine towards seven different sources: IRC+10216, Orion-S, Orion(KL), SgrB2(N), SgrB2(OH), W51M, and W3(IRS5) at 2mm wavelengths using archival data from the NRAO 12m telescope.[d,e] Hydroxylamine is not confirmed toward any region and upper limits to the total column density were determined for each source. The implications of these upper limits of NH_2OH to both the gas phase and grain surface models will also be discussed.

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[a] V. Blagojevic, S. Petrie, D. K. Bohme (2003) *Mon. Not. R. Astron. Soc.* **339**, L7-L11

[b] J. L. Snow, G. Orlova,V. Blagojevic, and D. K. Bohme (2007) *J. Am. Chem. Soc.* **129**, 9910-9917

[c] R. T. Garrod, S. L. Widicus Weaver, and E. Herbst, (2008) *ApJ* **682**, 283-302

[d] A. J. Remijan, D. P. Leigh,A. J. Markwick-Kemper, and B. E. Tuner (2008) *arXiv:0802.2273* **[astro-ph]**

[e] The data used are from survey data taken by Barry E. Turner between 1993-1995 at the NRAO 12m telescope and available at: http://www.cv.nrao.edu/Turner2mmLineSurvey and astroph reference.