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The I-131 labeled Tositumomab manufactured by Corixa pharmaceutical company is a monoclonal antibody with high specificity and affinity to the CD20 antigen on the surface of malignant human B-lymphocytes. The lymphocytes in general and the low-grade NHL specifically are very sensitive to ionizing radiation. The combination of monoclonal antibody and beta radiation from Iodine – 131 source is effective in the treatment of low grade NHL. We have been performing this treatment for NHL patients using the protocol set by the Bexxar/ Croxia for 5 patients in 2001. So far we have treated 3 patients after the approval for regular therapy. The therapeutic dose is calculated based on in-vivo measurements with a low dose of I-131 of 5.0 mCi. The 37% residence time for I-131 in the body is determined using whole body counting using a calibrated gamma camera. Based on this value and other physiological parameters, the therapeutic dose is calculated. In this paper we are presenting our procedure for dosimetric, therapy and the radiation safety procedures. Also we discuss the clinical results of the treatment. A comparison is also made with other radioactive isotopes such as Yttrium-90 used for the same treatment..