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Isotopic measurements (C,N,O) of detonation soot produced from labeled and unlabeled Composition B-3 indicate source of solid carbon residues. DAVID PODLESAK, VIRGINIA MANNER, RONALD AMATO, DANA DATTELBAUM, RICHARD GUSAVSEN, RACHEL HUBER, Los Alamos National Laboratory — Detonation of HE is an exothermic process whereby metastable complex molecules are converted to simple stable molecules such as H_2O, N_2, CO, CO_2, and solid carbon. The solid carbon contains various allotropes such as detonation nanodiamonds, graphite, and amorphous carbon. It is well known that certain HE formulations such as Composition B (60% RDX, 40% TNT) produce greater amounts of solid carbon than other more oxygen-balanced formulations. To develop a greater understanding of how formulation and environment influence solid carbon formation, we synthesized TNT and RDX with ^{13}C and ^{15}N at levels slightly above natural abundance levels. Synthesized RDX and TNT were mixed at a ratio of 60:40 to form Composition B and solid carbon residues were collected from detonations of isotopically-labeled as well as un-labelled Composition B. The raw HE and detonation residues were analyzed isotopically for C, N, O isotopic compositions. We will discuss differences between treatments groups as a function of formulation and environment. LA-UR – 17-21266

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