abstract We present the average abundances of the intermediate elements obtained by performing a stacked analysis of all the galaxy clusters in the archive of the X-ray telescope. We determine the abundances of Fe, Si, S, and Ni as a function of cluster temperature (mass) from 1 – 10 keV, and place strong upper limits on the abundances of elements that do not behave homogeneously as a single group. We show that the abundances of the most well-determined elements Fe, Si, and S in conjunction with recent theoretical supernovae yields do not give a consistent solution for the fraction of material produced by Type Ia and Type II supernovae at any temperature or mass. The general trend is for higher temperature clusters to have more of their metals produced in Type II supernovae than in Type Ia. The inconsistency of our results with abundances in the Milky Way indicate that spiral galaxies are not the dominant metal contributors to the intracluster medium (ICM). The pattern of elemental abundances requires an additional source of metals beyond standard and enrichment. The properties of this new source are well matched to those of Type II supernovae with very massive, metal-poor progenitor stars. These results are consistent with a significant fraction of the ICM metals produced by an early generation of population III stars.