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Photoluminescence (PL) spectra of ZnSe samples grown by Chemical Vapour Transport (CVT), Physical Vapour Transport (PVT), and from melt have been studied in the temperature range from 100 to 300 K. Impurity-defect composition of the studied samples was varied by doping with antimony (Sb) or iodine (I), as well as co-doping with Sb and I, both during the crystal growth and crystal annealing in the respective melts. It is established that the PL band with maximum at (570–580) nm is present only in the spectra for ZnSe samples co-doped with Sb and I, independent of growth technique and doping method. The ( $Sb_{Se}-I_{Se}$ ) radiative centre, with the energy level placed 0.5 eV above the valence band top, is proposed to be responsible for this PL band.