Crystals of PbI₂(pyd)₂ and PbI₂(enu)₂ (pyd=2-pyrrolidone; enu=ethyleneurea) were obtained by cooling their saturated N-methylformamide solution. The compounds crystallize in space group P2₁a with a=13.423(1) Å, b=15.662(1) Å, c=6.6898(6) Å and Z=4, and with a=13.287(1), b=15.458(2), c=6.513(6) Å and Z=4, for the pyd and enu compounds, respectively. They are isostructural.

The structure of the pyd compound is shown in Fig. 1. The Pb atom is surrounded by four I and two O atoms in distorted octahedron. The pyd and enu molecules coordinate through their opposite sides to be catenated towards the longer Pb-I bond. Consequently, the structures are depicted as the PbI₂ planes sharing their opposite sides to be catenated chain along the c.

The angles between the shorter Pb-I bonds are 97.5(1)° and 98.7(1)°, and these between the longer ones are 74.4(1)° and 75.8(1)° for the pyd and enu compounds, respectively. The O-Pb-O bond angles, 162(1)° and 163(1)°, bending over the two shorter Pb-I bond regions, seem to indicate that the 6s² electron pair accumulate towards the longer Pb-I bonds.