The effect of side chain substitution on the $^{35}$Cl NQR and crystal structure of amides of the type N-(2,6-dichlorophenyl)-amides, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-R}$ ($R = \text{H or CH}_3$, $y = 0, 1, 2$ or 3), has been studied by measuring the $^{35}$Cl NQR spectra and determining the crystal structures of the compounds N-(2,6-dichlorophenyl)-formamide, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-H}$ (DCPFA); N-(2,6-dichlorophenyl)-2-methylacetamide(propionamide), $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CH}_2\text{CH}_3$ (DCPMA); N-(2,6-dichlorophenyl)-2,2-dimethylacetamide(isobutyramide), $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CH(CH}_3)_2$ (DCPDMA) and N-(2,6-dichlorophenyl)-2,2,2-trimethylacetamide(neopentylamide), $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-C(CH}_3)_3$ (DCPTMA), and by analysing the present data along with the $^{35}$Cl NQR spectra and / or crystal structures of the compounds, $2,6\text{-dichloroaniline, 2,6-Cl}_2\text{C}_6\text{H}_3\text{-NH}_2$ (DCA), N-(2,6-dichlorophenyl)-acetamide, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CH}_3$ (DCPA), N-(2,6-dichlorophenyl)-2-chloroacetamide, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CH}_2\text{Cl}$ (DCPCA), N-(2,6-dichlorophenyl)-2,2-dichloroacetamide, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CHCl}_2$ (DCPDCA) and N-(2,6-dichlorophenyl)-2,2,2-trichloroacetamide, $2,6\text{-Cl}_2\text{C}_6\text{H}_3\text{-NHCO-CCl}_3$ (DCPTCA). The crystal type, space group, formula units and lattice constants in Å of the new structures are: DCPFA: orthorhombic, Pbcn, $Z = 8$, $a = 8.593(3)$, $b = 12.728(4)$, $c = 14.376(4)$; DCPMA: orthorhombic, P2$_1$2$_1$2$_1$, $Z = 4$, $a = 4.774(2)$, $b = 10.961(5)$, $c = 19.562(8)$; DCPDMA: monoclinic, P2$_1$/c, $Z = 4$, $a = 9.901(4)$, $b = 13.785(5)$, $c = 9.060(3)$, $\beta = 103.58(2)$° and DCPTMA: monoclinic, P2$_1$/n, $Z = 8$, $a = 16.047(5)$, $b = 9.882(3)$, $c = 16.270(5)$, $\beta = 102.12(1)$°. The compound, DCPTMA shows two molecules in its asymmetric unit. This is in agreement with the multiple lines observed in the $^{35}$Cl NQR spectra of the compound. The conversion of DCA (monoclinic) into it’s various acid amides DCPFA, DCPMA, DCPDMA, DCPTMA, DCPCA and DCPTCA affects it’s crystal symmetry. The replacement of the side chain CH$_3$ in DCPA by the H atom or substitution of either a CH$_3$ group or a Cl atom for one of the H atoms in the side chain CH$_3$ or replacement of the two ring Cl atoms by the H atoms changes it’s crystal symmetry from monoclinic to orthorhombic, while the substitution of 2 or all the 3 H atoms in the CH$_3$ group of DCPA by 2 or 3 CH$_3$ groups or Cl atoms restores it’s crystal symmetry back to the monoclinic type. The bond lengths and bond angles are normal except for some deviations.

Key words: $^{35}$Cl NQR, Crystal Structures; N-2,6-dichlorophenyl-substituted amides.