# Structural Studies on *N*-(Phenyl)-2,2,2-trimethyl-acetamide, *N*-(2,4,6-Trimethylphenyl)-2,2,2-trimethyl-acetamide and *N*-(2,4,6-Trimethylphenyl)-2,2,2-trichloro-acetamide, 2,4,6-$X_3C_6H_2NH$-CO-$CY_3$ (X = H or $CH_3$; Y = $CH_3$ or Cl)

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To study the effect of side chain and ring substitutions on the solid state geometry of amides of the general formulae $C_6H_5NH$-CO-$CX_3$ and 2,4,6-$X_3C_6H_2NH$-CO-$CH_{3-y}X_y$ (X = $CH_3$ or Cl and $y = 0, 1, 2, 3$), crystal structures of *N*-(phenyl)-2,2,2-trimethyl-acetamide, $C_6H_5NH$-CO-$C(CH_3)_3$ (**PTMA**); *N*-(2,4,6-trimethylphenyl)-2,2,2-trimethyl-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$C(CH_3)_3$ (**TMPTMA**) and *N*-(2,4,6-trimethylphenyl)-2,2,2-trichloro-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CCl_3$ (**TMPTCA**) have been determined. The data are analyzed along with those of *N*-(phenyl)-acetamide, $C_6H_5NH$-CO-$CH_3$; *N*-(phenyl)-2,2,2-trichloro-acetamide, $C_6H_5NH$-CO-$CCl_3$; *N*-(2,4,6-trimethylphenyl)-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CH_3$; *N*-(2,4,6-trimethylphenyl)-2-chloro-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CH_2Cl$; *N*-(2,4,6-trimethylphenyl)-2,2-dichloro-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CHCl_2$; *N*-(2,4,6-trimethylphenyl)-2-methyl-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CH_2CH_3$; *N*-(2,4,6-trimethylphenyl)-2,2-dimethyl-acetamide, 2,4,6-$(CH_3)_3C_6H_2NH$-CO-$CH(CH_3)_2$; *N*-(2,4,6-trichlorophenyl)-acetamide, 2,4,6-$Cl_3C_6H_2$-NH-CO-$CH_3$; *N*-(2,4,6-trichlorophenyl)-2-chloro-acetamide, 2,4,6-$Cl_3C_6H_2NH$-CO-$CH_2Cl$; *N*-(2,4,6-trichlorophenyl)-2,2-dichloro-acetamide, 2,4,6-$Cl_3C_6H_2NH$-CO-$CHCl_2$ and *N*-(2,4,6-trichlorophenyl)-2,2,2-trichloro-acetamide, 2,4,6-$Cl_3C_6H_2NH$-CO-$CCl_3$. The crystallographic system, space group, formula units and lattice constants in Å are: **PTMA**: orthorhombic, $Pca2_1$, $Z = 4$, $a = 9.969(3)$, $b = 10.642(3)$, $c = 10.172(3)$; **TMPTMA**: tetragonal, $P4_12_12$, $Z = 8$, $a = 12.708(3)$, $b = 12.708(3)$, $c = 17.354(4)$; **TMPTCA**: monoclinic, $P2_1/n$, $Z = 8$, $a = 12.255(4)$, $b = 17.904(6)$, $c = 12.619(4)$, $\beta = 95.23(2)^\circ$. **PTMA** and **TMPTMA** have 1 molecule each in their asymmetric units, but **TMPTMA** shows disorder. **TMPTCA** has 2 molecules in its asymmetric unit. The comparison of the bond parameters reveals that there are significant changes in the structural parameters with ring and side chain substitutions.

*Key words:* Crystal Structures; *N*-(Phenyl)-2,2,2-trimethyl-acetamide; *N*-(2,4,6-Trimethylphenyl)-2,2,2-trimethyl-/trichloro-acetamides.