

# Organic Chemistry



rick y rick

Part 4

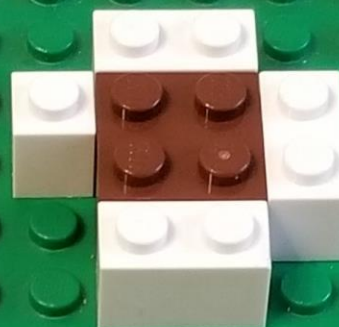
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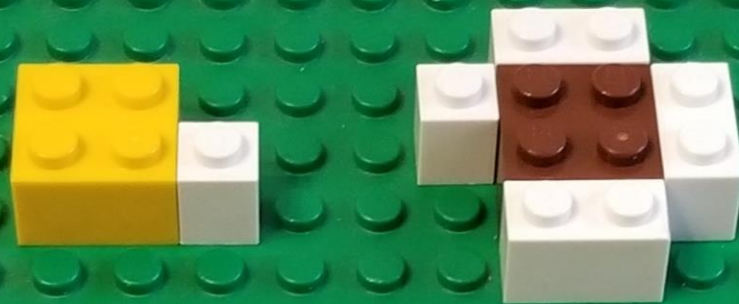
This is a chlorine atom (**Cl**).





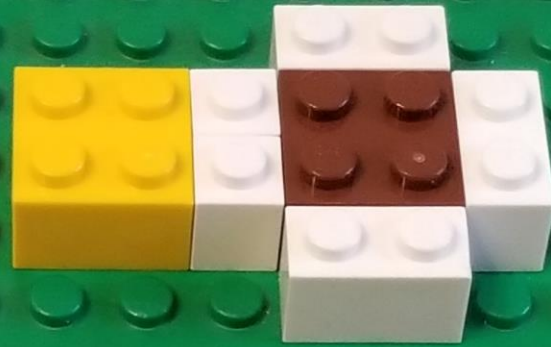
This is a chlorine atom with a free valence electron.





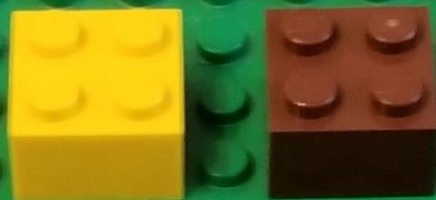
We can connect a hydrogen atom to a chlorine atom to form an octet of electrons.





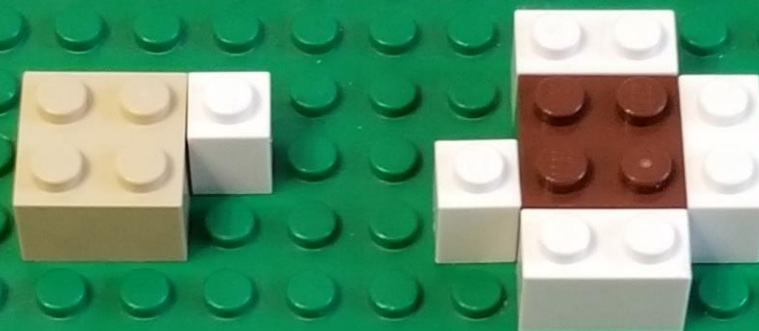
We get a molecule of hydrogen chloride (**HCl**).





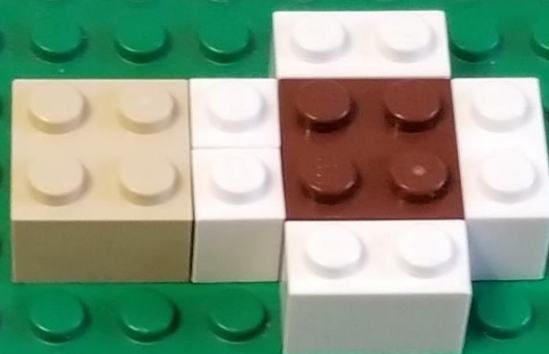
We can omit an implicit octet of electrons.





We can also add a sodium atom (**Na**) with one free valence electron to a chlorine atom to form an octet of electrons.





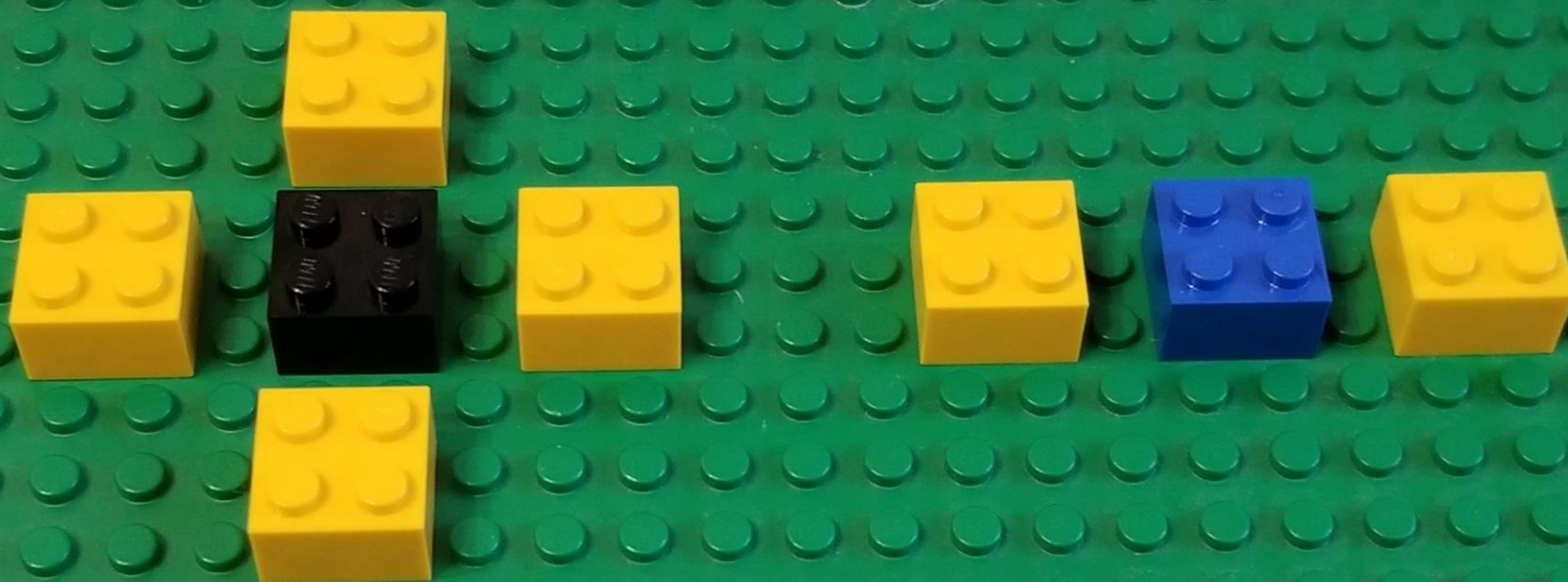
We get a molecule of sodium chloride (**NaCl**).





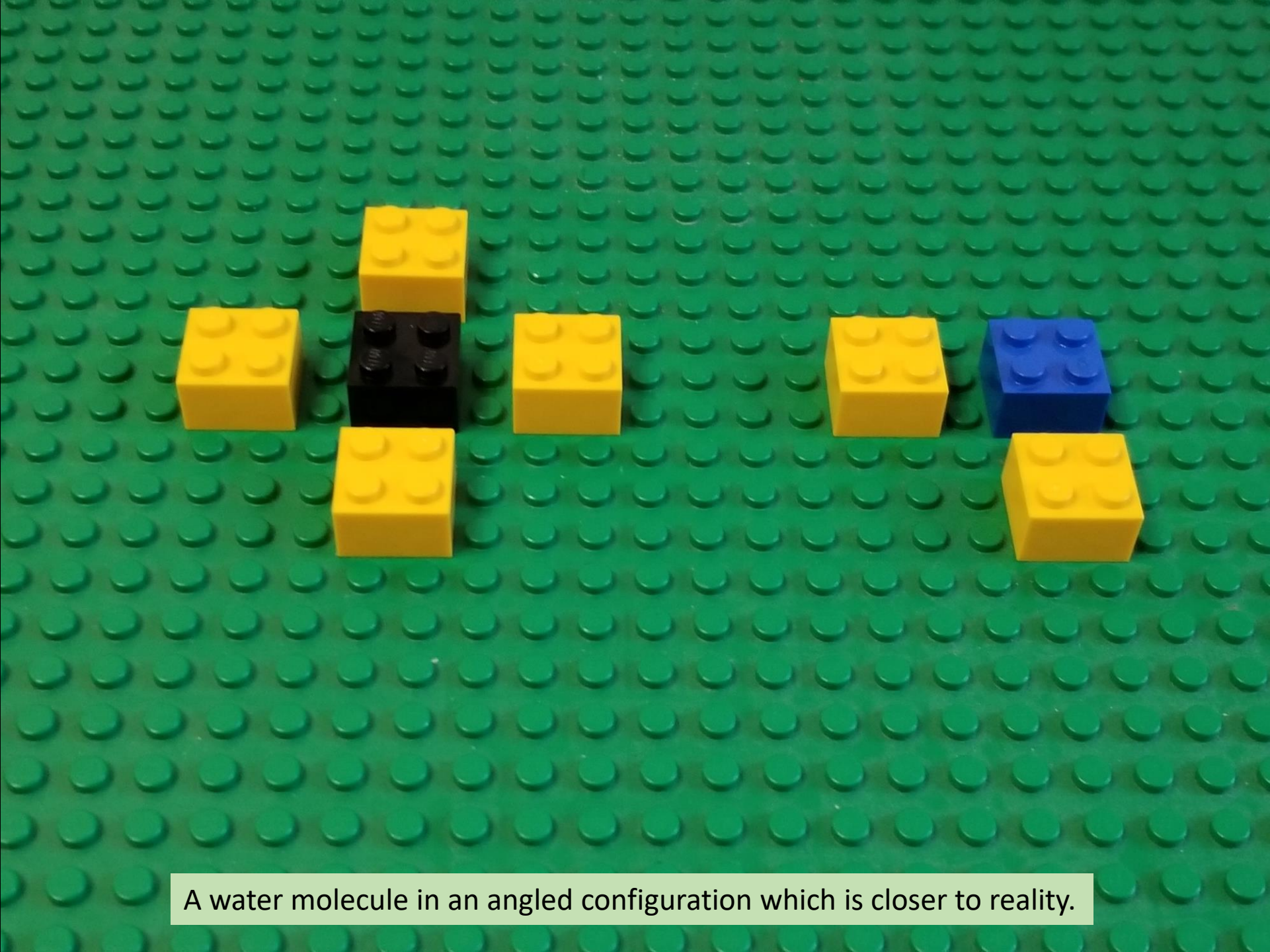
We can also omit implicit octet electrons here.





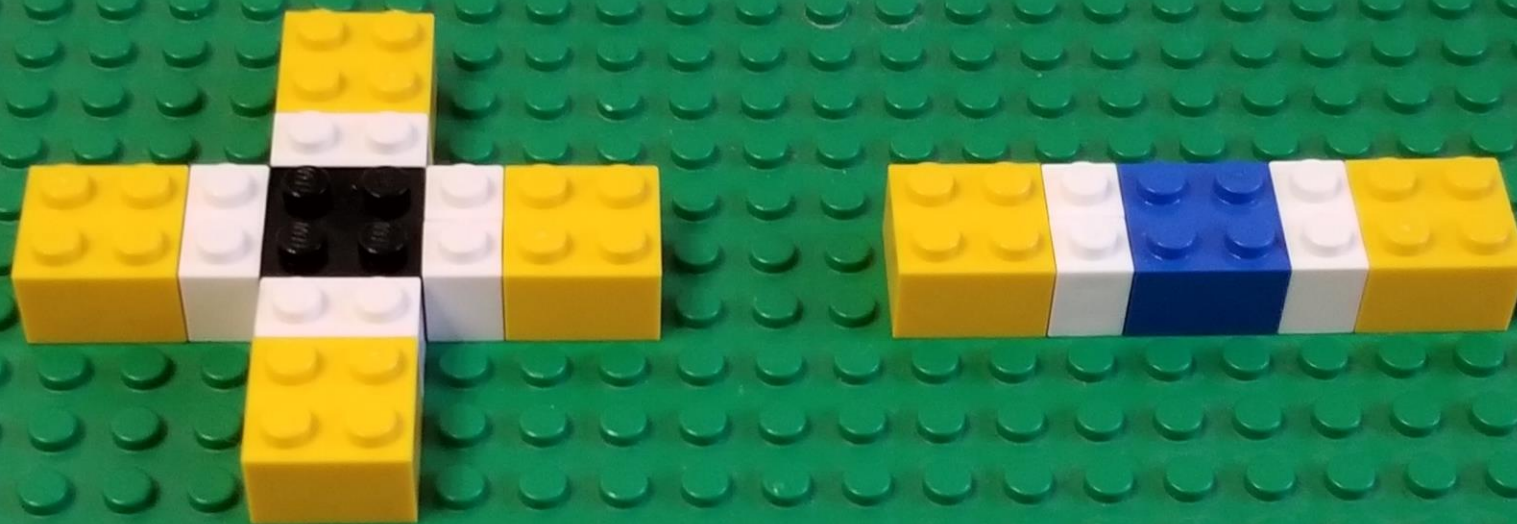
Methane and water molecules with omitted implicit electron octet.





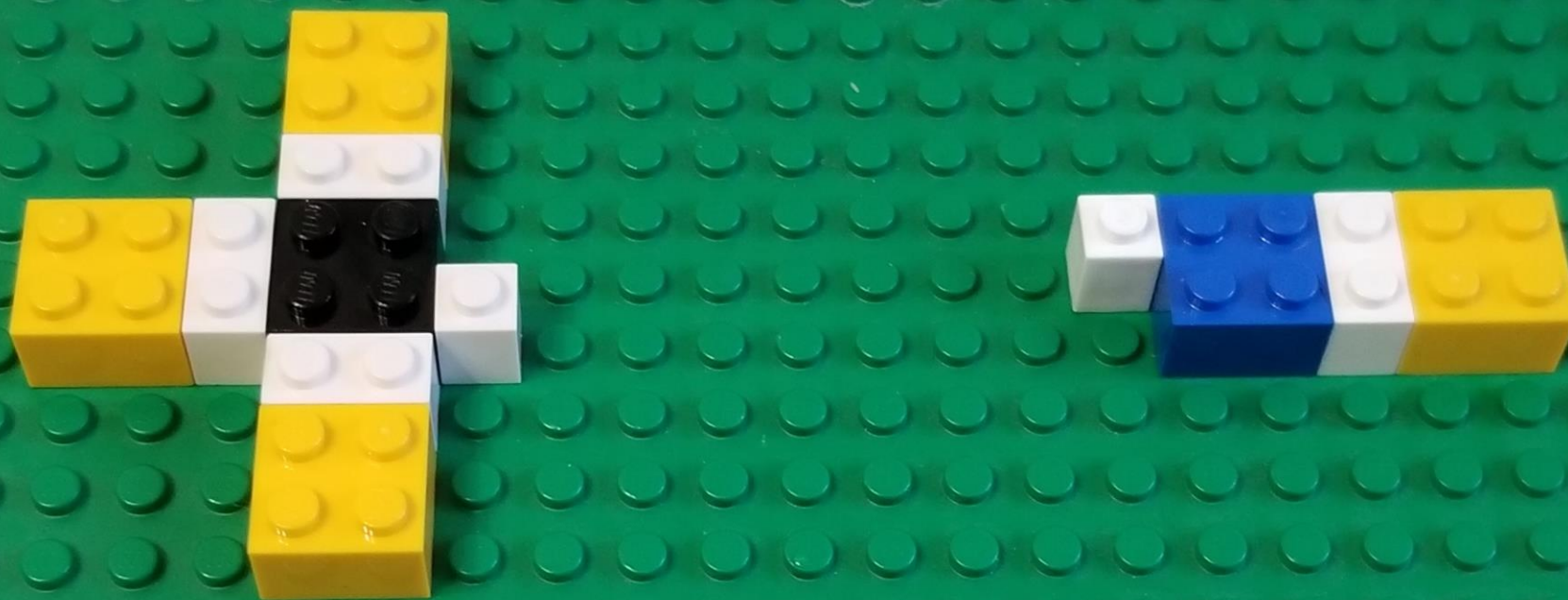
A water molecule in an angled configuration which is closer to reality.





Methane and water molecules with shown covalent bond pairs.

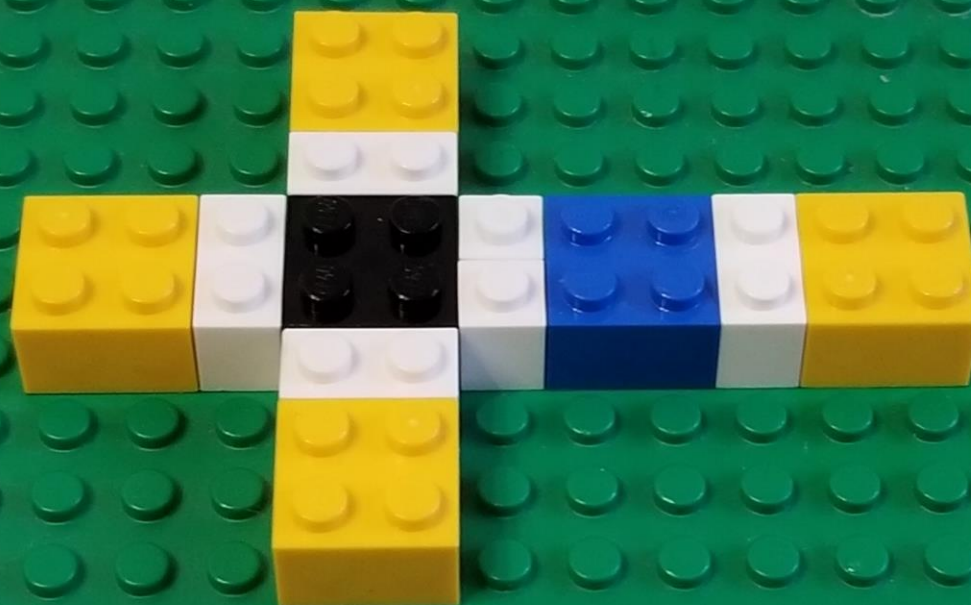




If we remove hydrogen atoms together with one electron from methane and water molecules, we get methyl (**-CH<sub>3</sub>**) and hydroxyl (**-OH**) groups ...

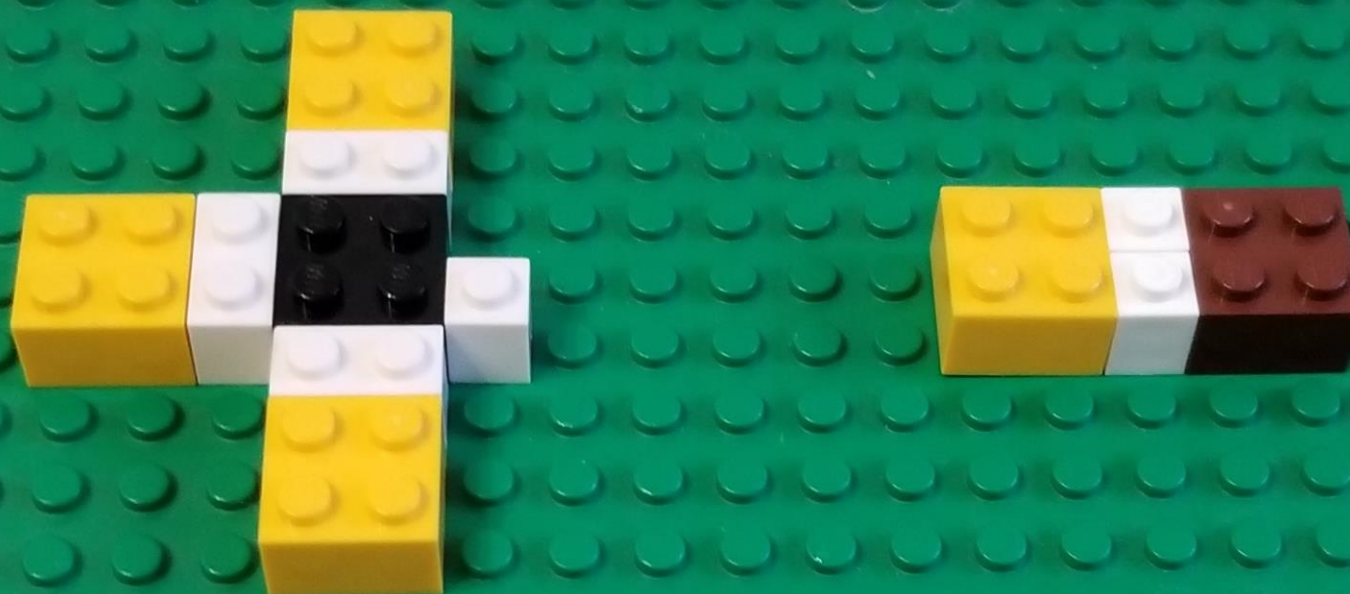


... which can be combined to form a molecule of methanol ( $\text{CH}_3\text{OH}$ ).



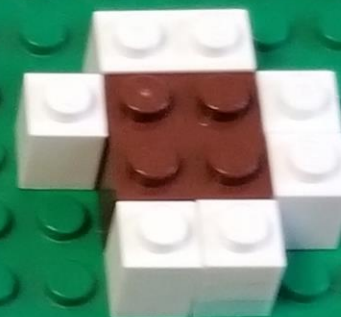
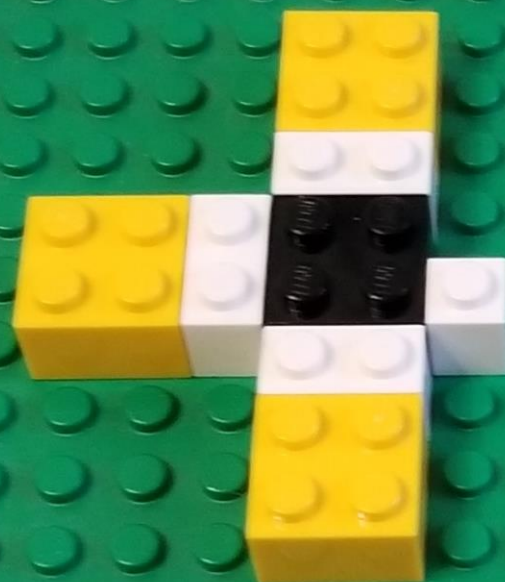
Organic compounds that contain **-OH** group are called alcohols. Groups that contain atoms different from carbon are called **functional groups** because they introduce new functions, properties (for example, solubility in water).





A methyl group and a molecule of hydrogen chloride. We can break a hydrogen atom with its electron from the latter.

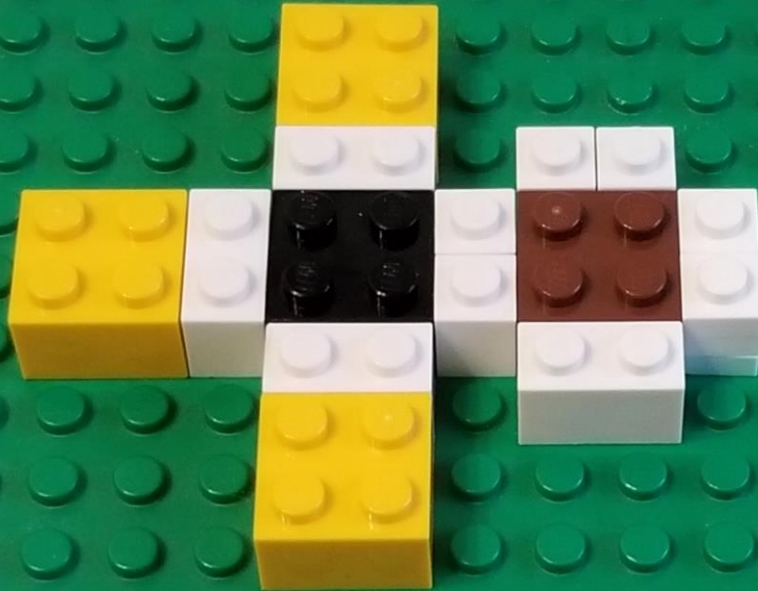




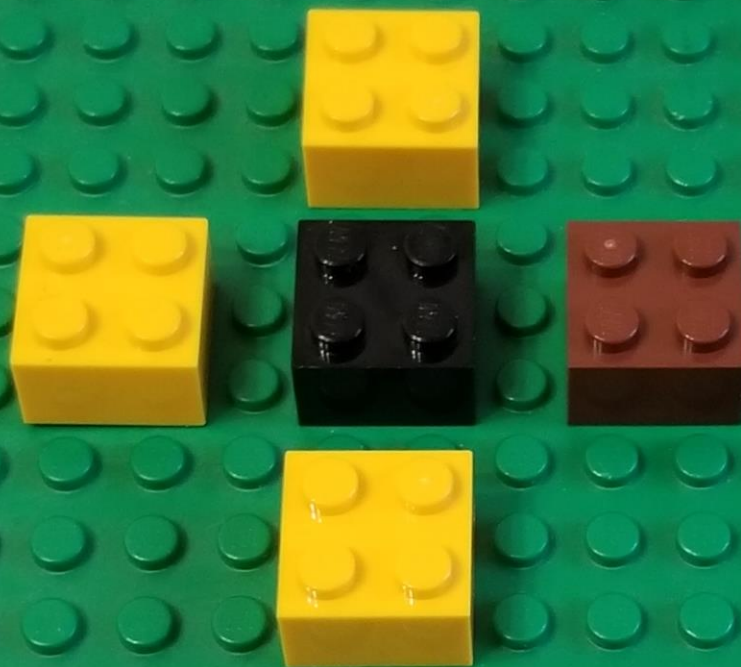
As a result, a chlorine atom combines with a methyl group to form ...



... a molecule of chloromethane (methyl chloride,  $\text{CH}_3\text{Cl}$ ).

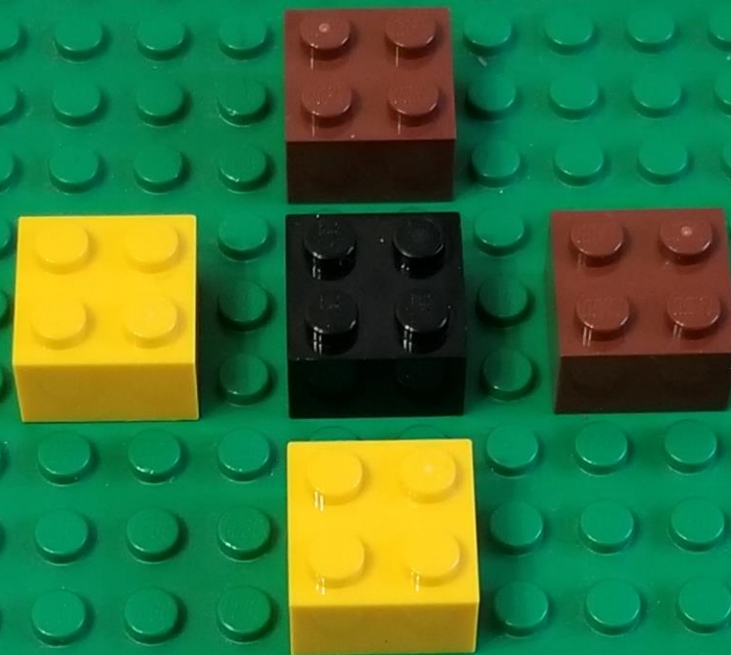






The same molecule but with omitted implicit electron octet.

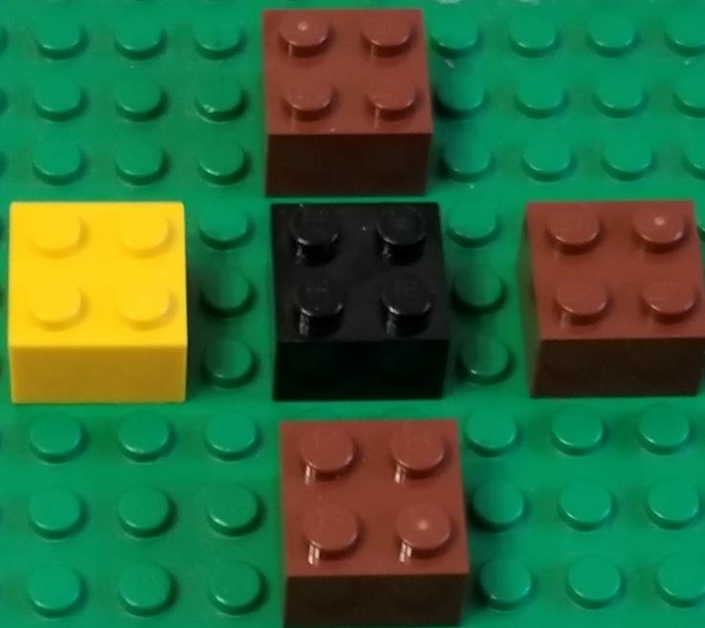




Other hydrogen atoms can be replaced with chlorine atoms to get molecules of **dichloromethane** ( $\text{CH}_2\text{Cl}_2$ ), ...

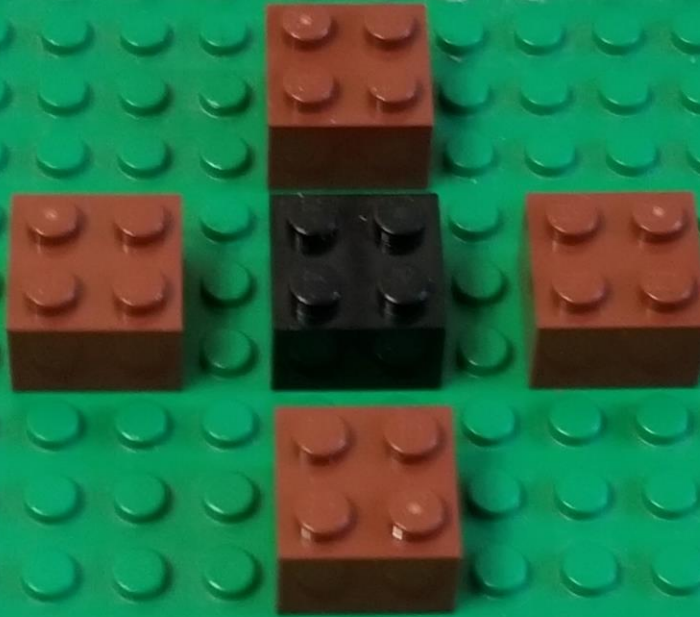


... **trichloromethane** (chloroform, **CHCl<sub>3</sub>**), and ...





... **tetrachloromethane** (carbon **tetrachloride**,  $\text{CCl}_4$ ).







Continued with  
Part 5