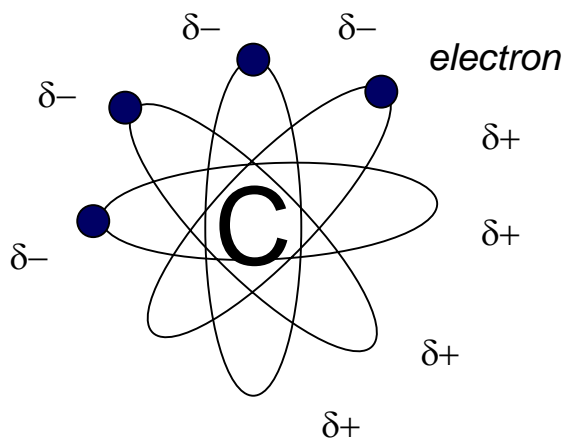




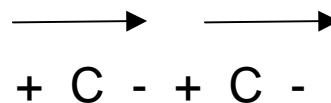
## How Carbovet traps toxins ?

### 1<sup>st</sup> : *Induced dipoles*

The carbon atom has an electron cloud. This cloud gives some temporary dipoles (see below).



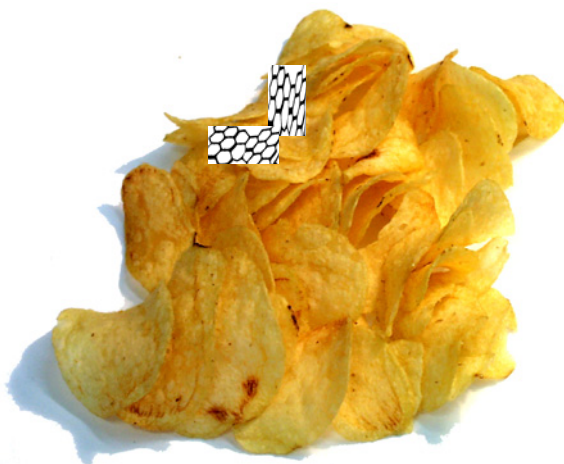
And when two atoms are near, you observe an attraction like that:



These dipoles are fluctuating, so they do not stay stable in time. These temporary dipoles set up an induced dipole and this, multiplied x times in the carbon structure rises to **Van der Waals force**.

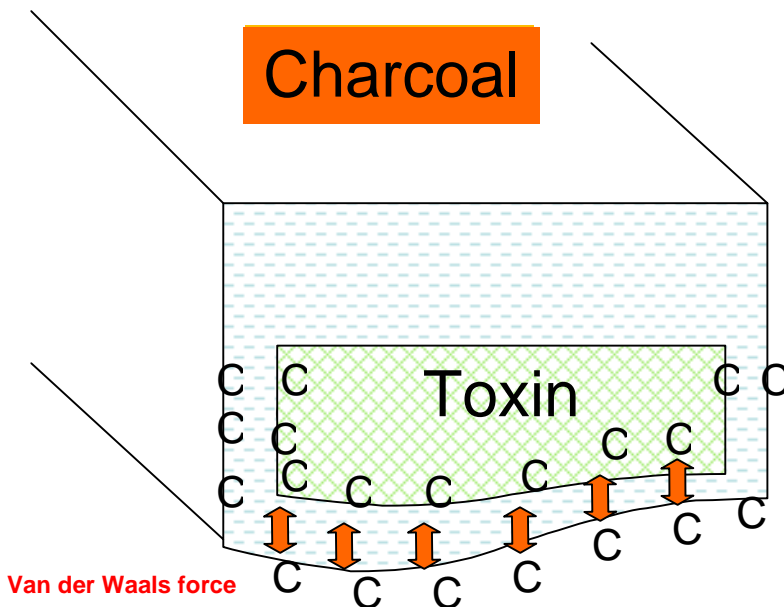
### 2<sup>nd</sup> : *Charcoal*

Figure 1: Structure of charcoal



Normal charcoal contains graphitic fragments and disorganised material (figure 1).

Charcoal contains at least 85% of carbon atoms and due to this it is creating a lot of induced dipoles.



Attraction of a toxin, due to Van der Waals depends on :

- the surface area (depending on the molecular weight),
- the bond types (creating some strong forces)
- the polarisability of the molecule

A toxin is trapped by charcoal because of van der Waals forces and specific interactions .

### 3rd : Pores

The specificity of charcoal is in its huge quantity of pores. These pores are also of different sizes. Charcoal is a non activated charcoal with a small adsorbing surface (115-150m<sup>2</sup>/g) and the part of small pores is really poor. This is why the small molecules have less chance to be trapped by charcoal. The toxins are trapped thanks to this variety of pore sizes.

