BOND VS MOLECULE POLARITY

BOND POLARITY:

-Is established by evaluating difference in electronegativity between two atoms only.

-An arrow is used to point to the more electronegative atom.

-Partial charges are assigned to individual atoms.

MOLECULAR POLARITY:

-Is established by evaluating all of the bond polarities and overall shape of a molecule.

-One arrow is used to point to the negative region of the molecule.

-Partial charges can be assigned to atoms or regions.

MOLECULE POLARITY

PHET SIMULATION

1. From the home page click on “Two Atoms”
    a. Check to view bond dipole (default), partial charges and bond character
    b. Check electrostatic potential to visualize electron cloud in color
    c. Slide the electronegativity of Atom B to “more”
    d. Turn the electric field on
    e. Grab atom B and rotate the molecule, let go and watch what happens.
    f. Move the electronegativity of both atoms to the center mark
    g. Grab atom B and rotate; let go and note what happens.
    h. Play with the different options (both less, both more, electron density, etc.)
2. From the home page click on a “Three Atom” molecule.
    a. Play around with all of the options
    b. Note that you change the bond angle by grabbing atom A or C and rotate the molecule by grabbing atom B
3. Answer the following questions:
    a. If a molecule has polar bonds does that mean the molecule will always be polar? Explain using data from the “Three Atom” simulation
    b. What is the electric field in the simulation used for?
    c. Google the definition of electrophoresis.
    d. Review your book notes from earlier this week. Why do molecules have the most variation in their properties?