Polarity

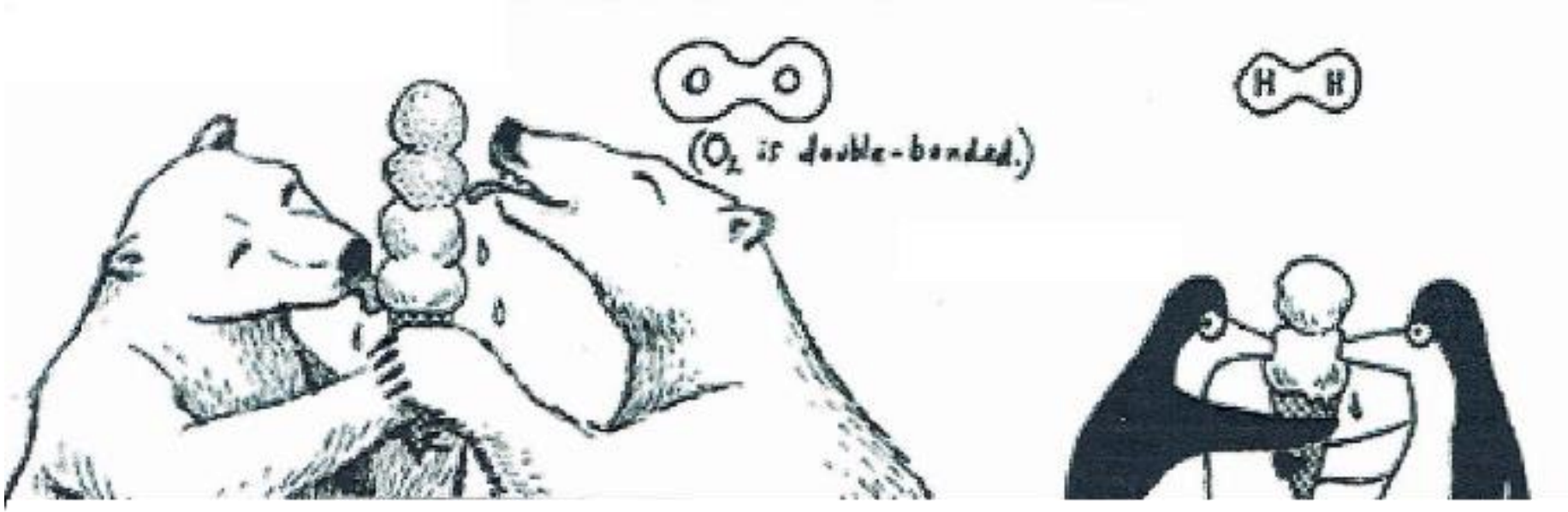
Target: I can identify if a molecule is polar or non-polar based on structure

Polarity Flow Chart Handout

K	C	Q

What's happening inside covalent molecules like O_2 or H_2?

Electrons are shared *equally*



Example: HF

HF is covalent but electrons are *not* shared equally

Molecules become *POLAR* when electrons are not shared equally

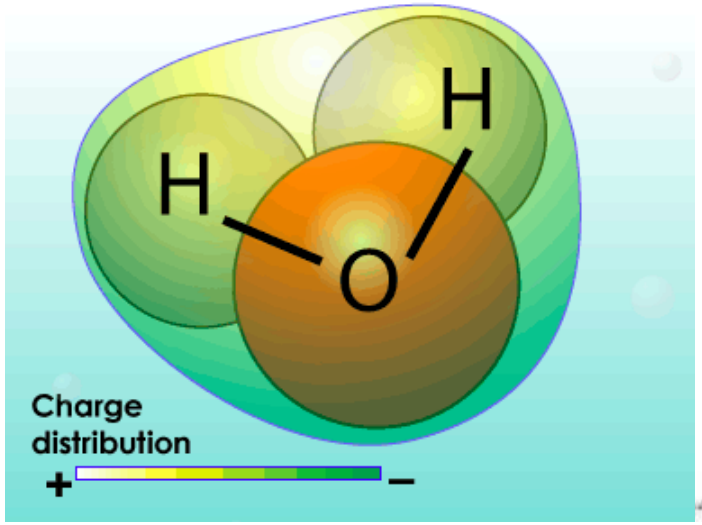
Polar molecules with more than 2 atoms

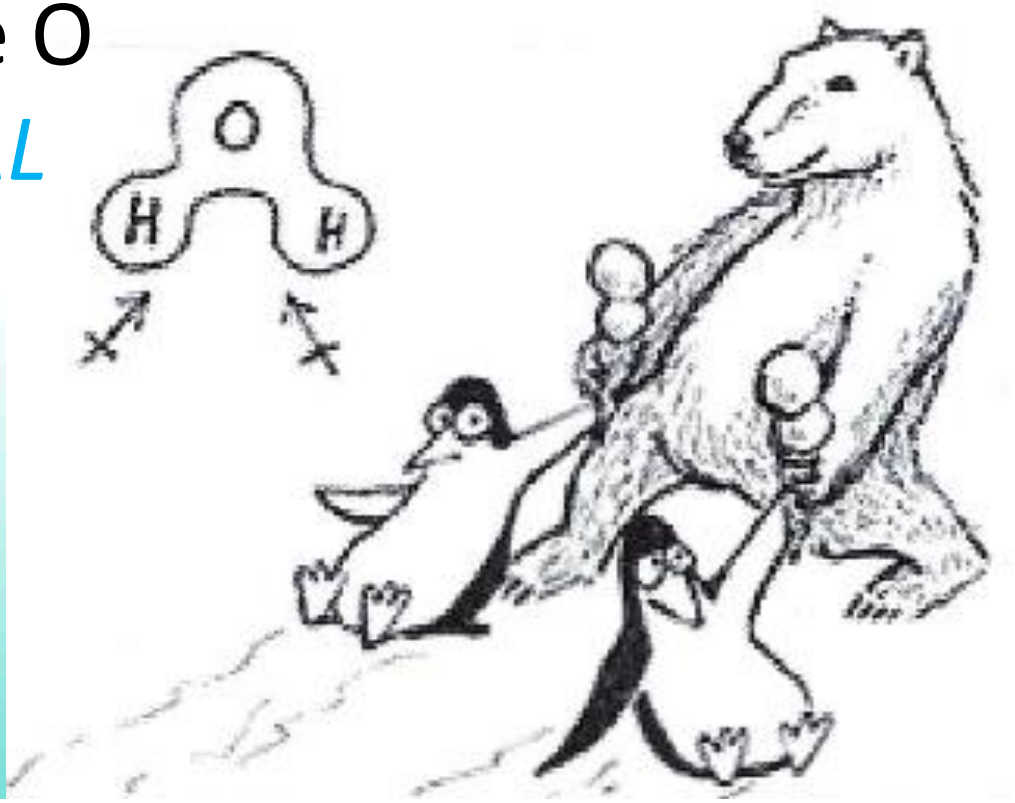
Water has:

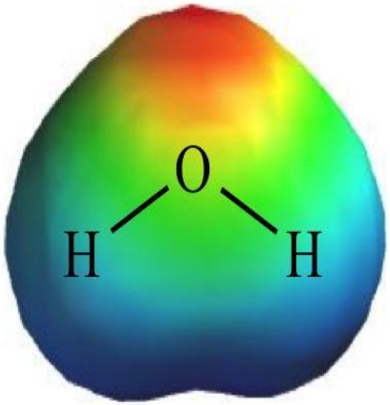
2 H's willing to almost give up electrons

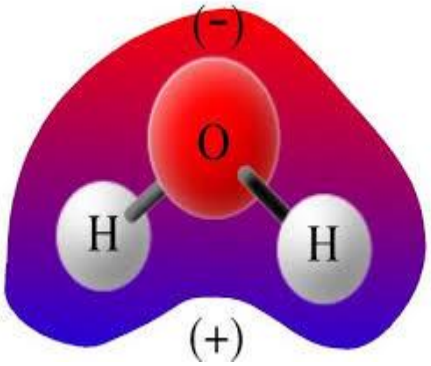
1 electronegative O

Ends up UNEQUAL



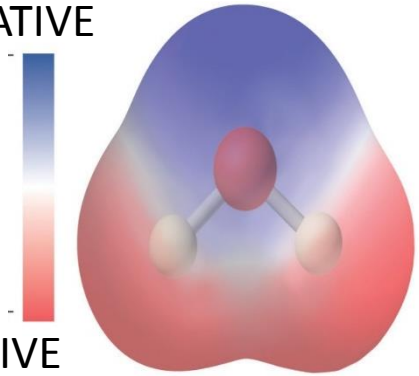




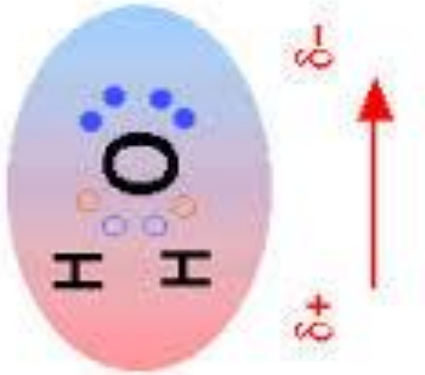


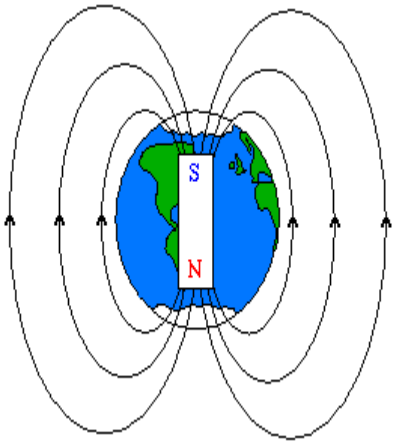
WATER IS A *POLAR MOLECULE*

NEGATIVE



POSITIVE

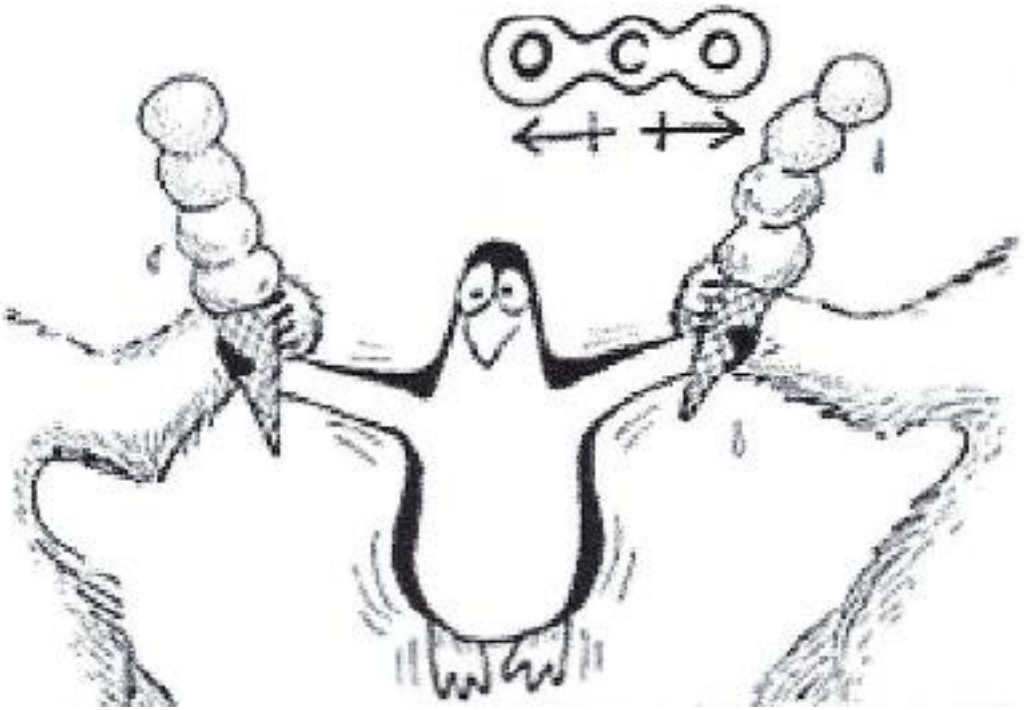




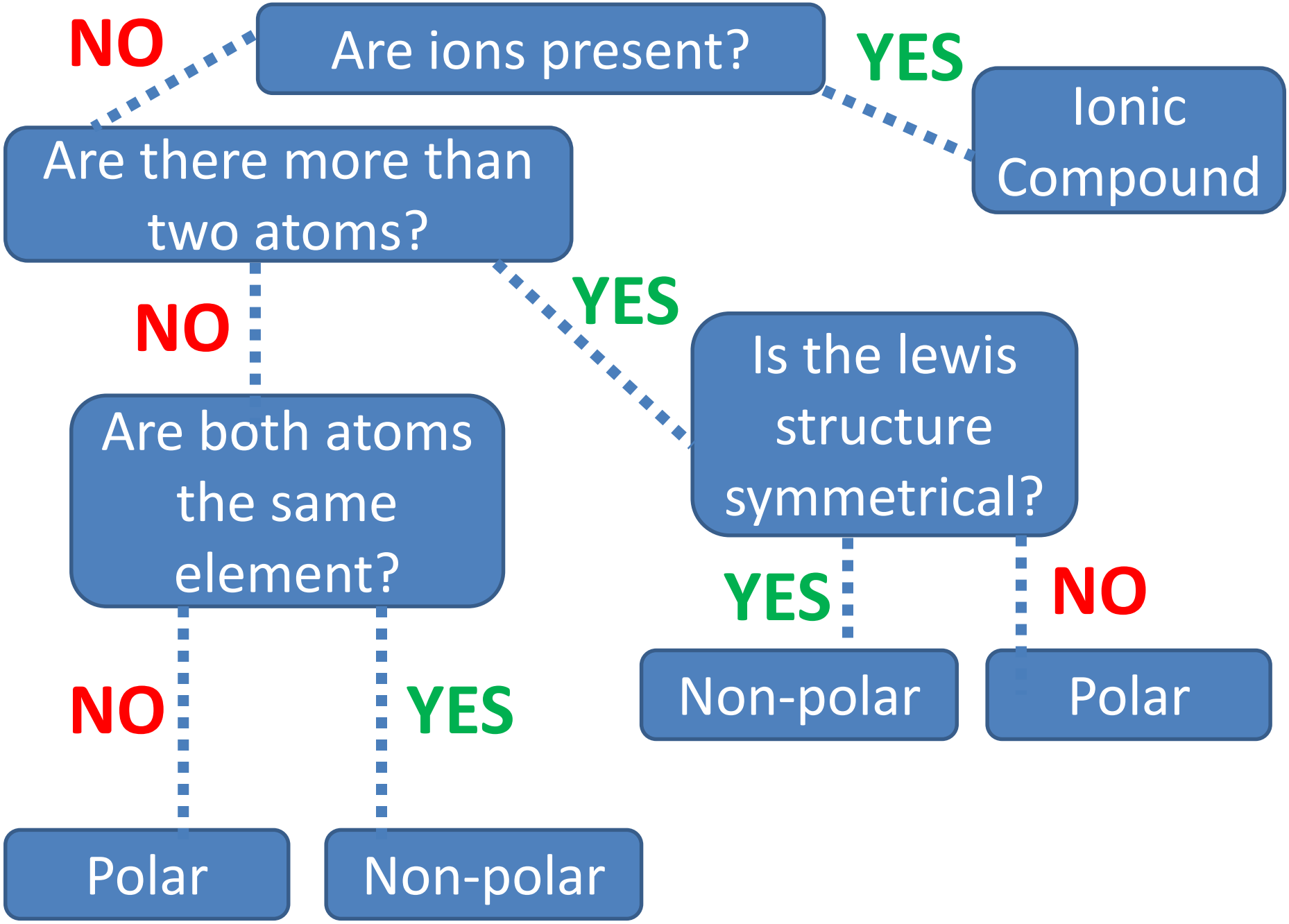
Symmetry…the pole destroyer!

CO_2

Has 1 carbon surrounded by 2 electronegative Oxygens, but is NOT polar?!?!



Electron density is still SYMETRICAL which makes it non-polar


NO
Are ions present?
YES
Ionic Compound
Are there more than two atoms?
NO
YES
Are both atoms the same element?
Is the lewis structure symmetrical?
NO
YES
YES
NO
Polar
Non-polar
Non-polar
Polar

Three ways to diagram polarity
(done on the whiteboard – ask a friend if you were absent)

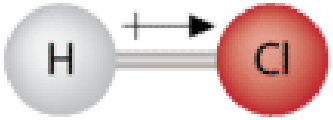
Molecule	Lewis Structure	Polar or non polar?
H_2O		
Br_2		
CH_4		
NH_3		
CS_2		
CH_3Br		

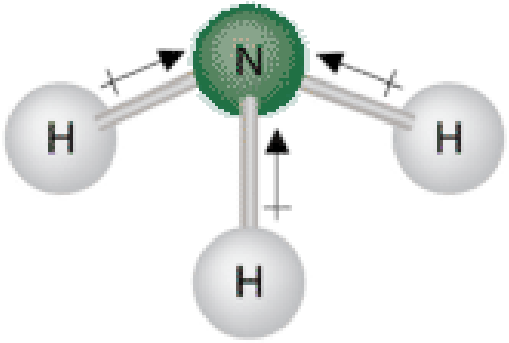
Target: I can identify if a molecule is polar or non-polar based on structure

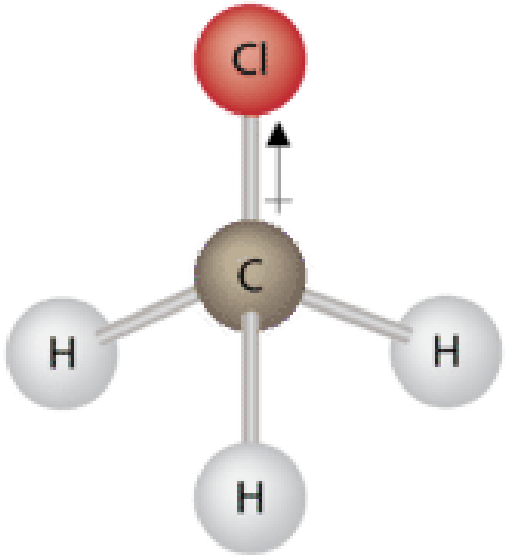
Polarity Flow Chart Handout

K	C	Q

Polar:







Non-polar: