

# Project SOS

## the Science of Sustainability

operates through the  
**Palouse Discovery Science Center in Pullman, WA.**



The goals of the project are that youth gain a basic understanding of the physics of heat transfer, learn to work collaboratively on team challenges, bring their interest and information home to their families, and begin to think about the future and how their families can save energy.

Youth learn the basic concepts of physics through demonstrations and several simple hands-on exhibit activities and then work together to conserve energy in a model house using energy-saving measures they learned from the exhibits. They also learn how to use simple tools to become “heat science detectives” to test their own home by performing an energy audit to find areas where heat energy can escape in the winter or enter in the summer.



Through Project SOS, youth and their families have learned how to apply their new skills and knowledge to find ways to make their own homes more energy efficient.



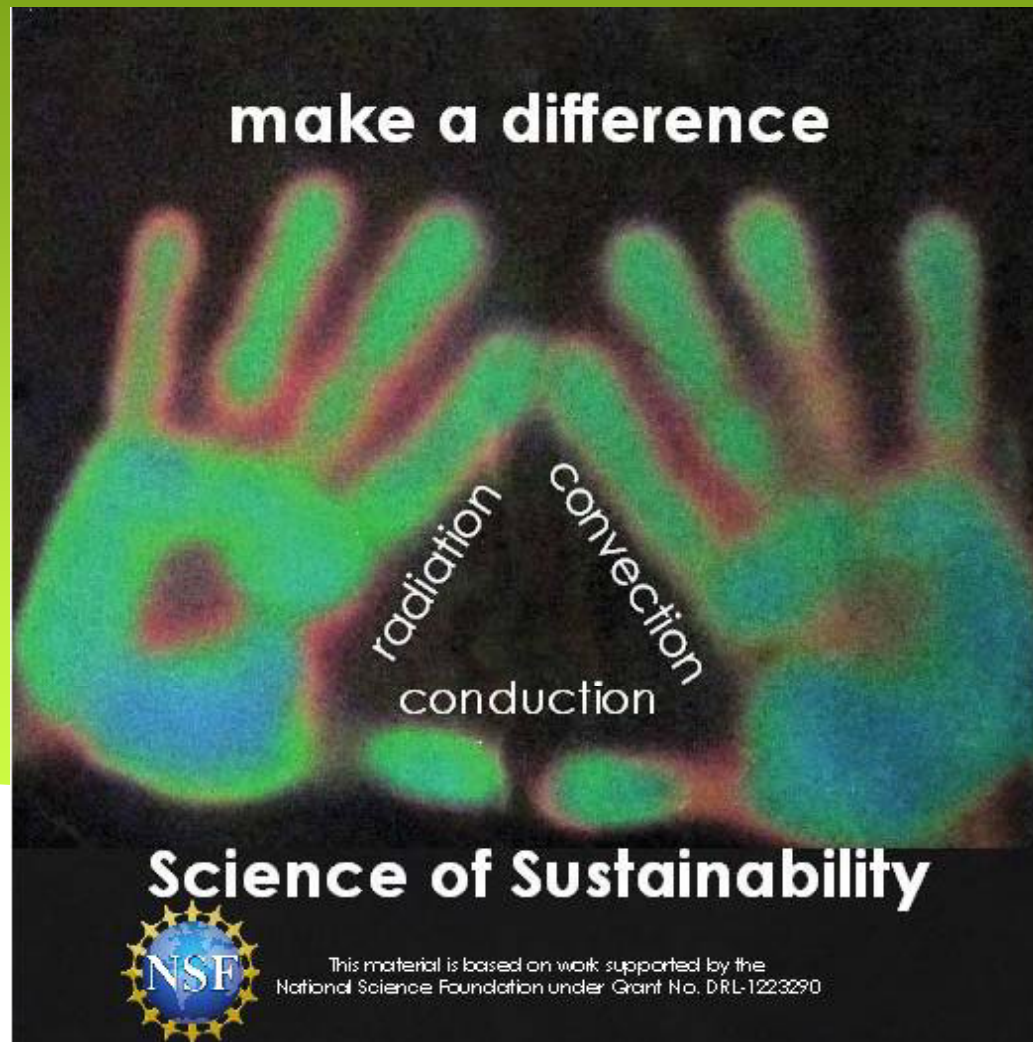
**For more information about Project SOS and future plans,  
contact Kathy Dawes at [outreachpdsc@gmail.com](mailto:outreachpdsc@gmail.com)  
or call 208-310-2922**

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See more at [www.palousescience.net/#!/sos-introduction/c1mws](http://www.palousescience.net/#!/sos-introduction/c1mws)

# Project SOS

## the Science of Sustainability



# Why are we doing Project SOS?

**SOS – The Science of Sustainability**

What does sustainability  
mean?

to “aim for low or zero net energy use”  
is a goal for sustainable housing

# Different forms of energy ...



*Electricity*



*Magnetism*



*Sound*



*Light*



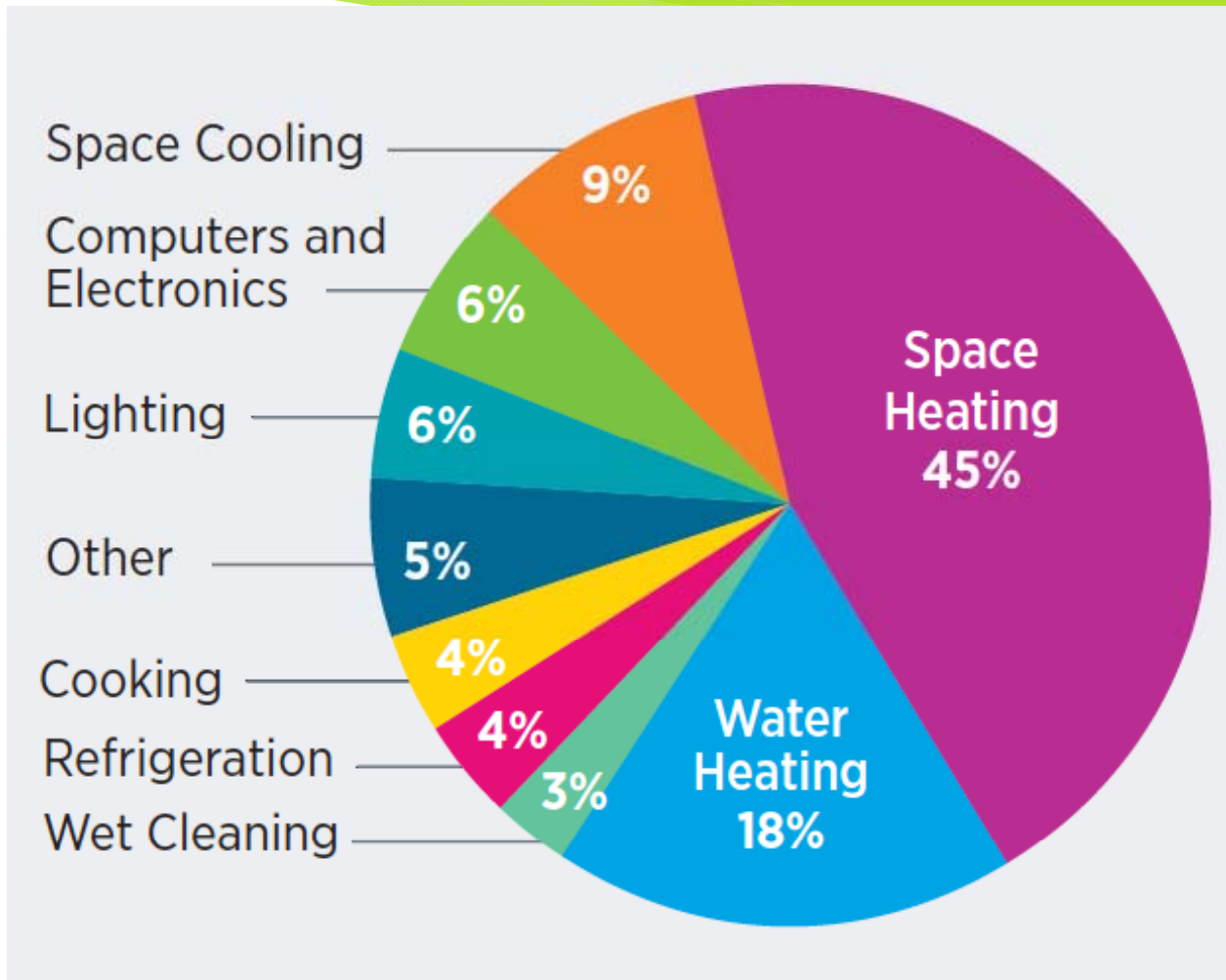
*Chemical*



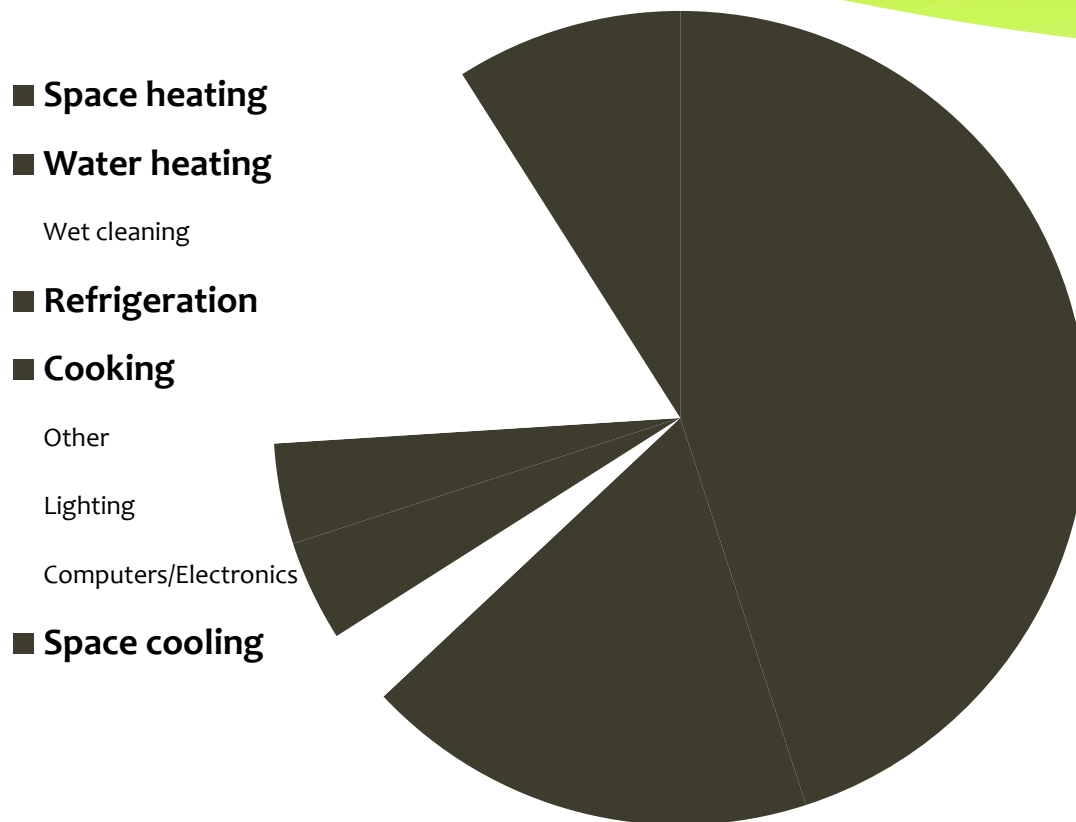
*Heat*

# Did you know???

## Home energy use



# Home energy use that's related to Heat =



**80%**



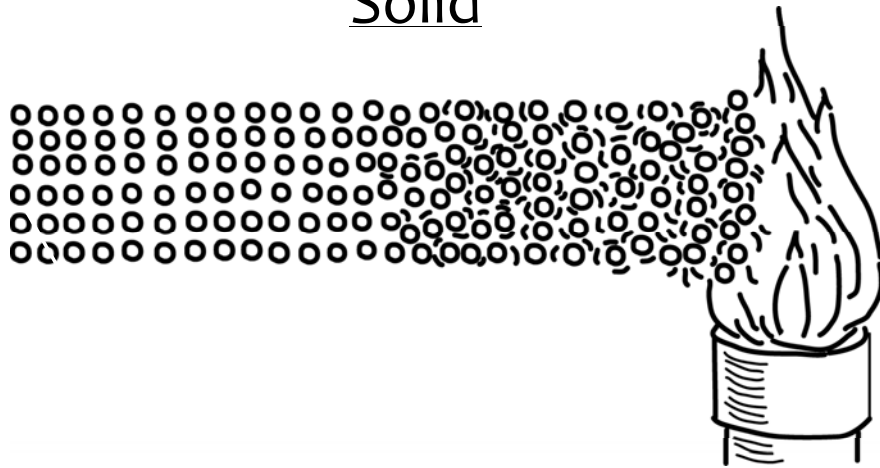
# That's why we're Exploring **Heat Energy**



# Temperature

The measure of the average motion of atoms in a substance

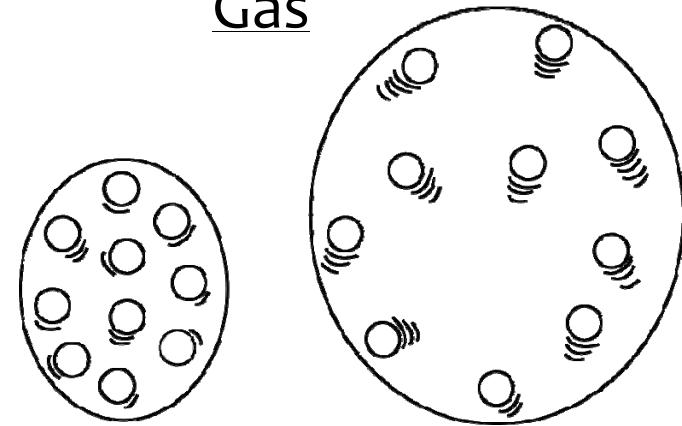
Solid



Cold

Hot

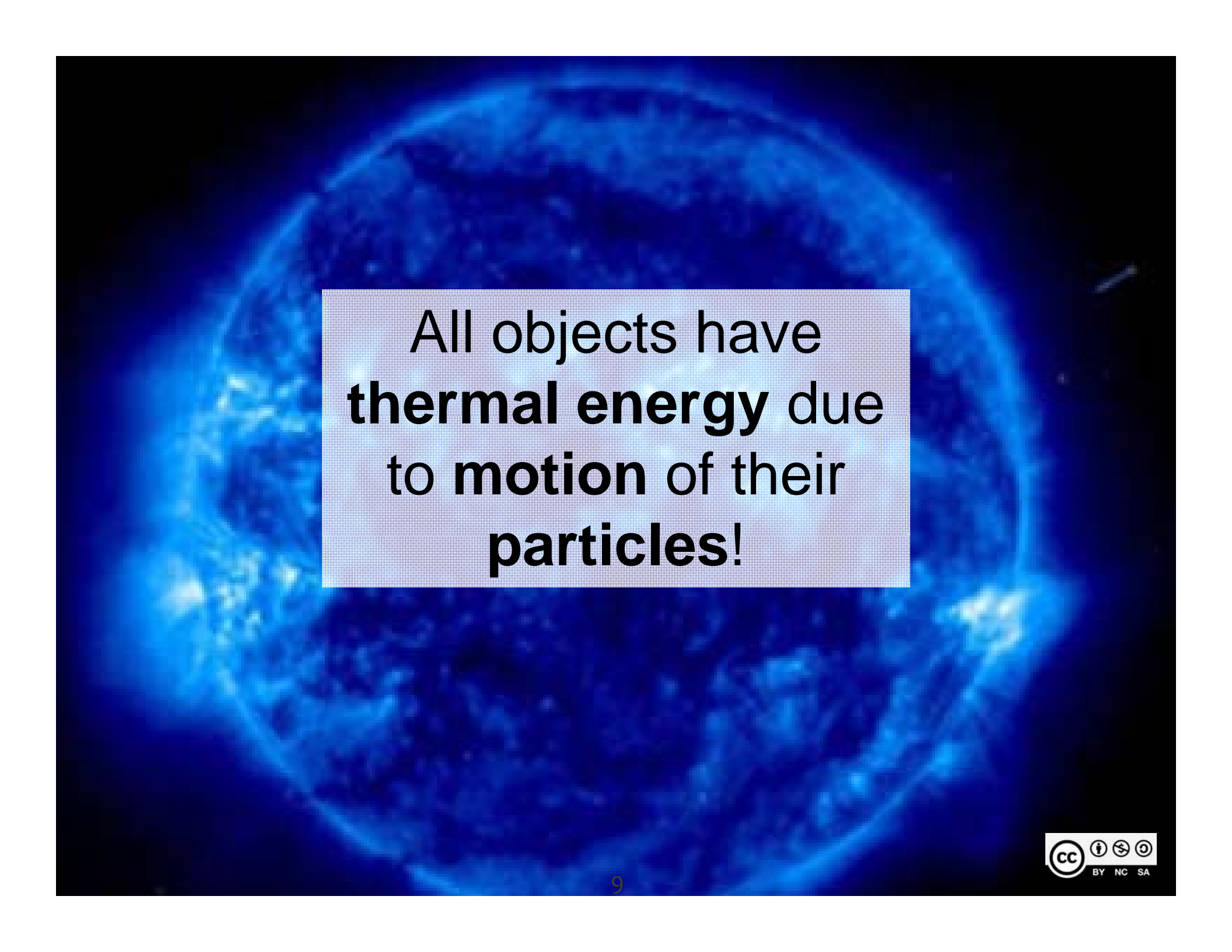
Gas



Cold

Hot

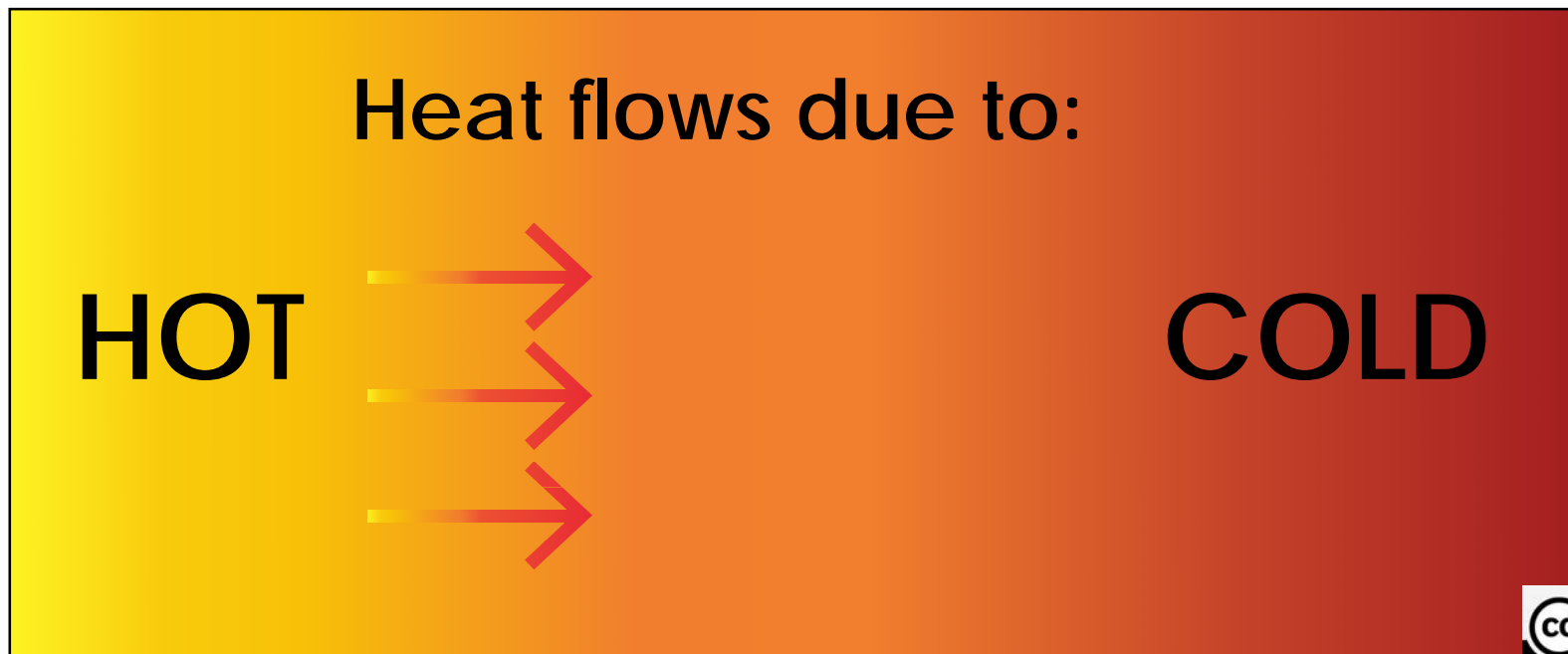




All objects have  
**thermal energy** due  
to **motion** of their  
**particles!**

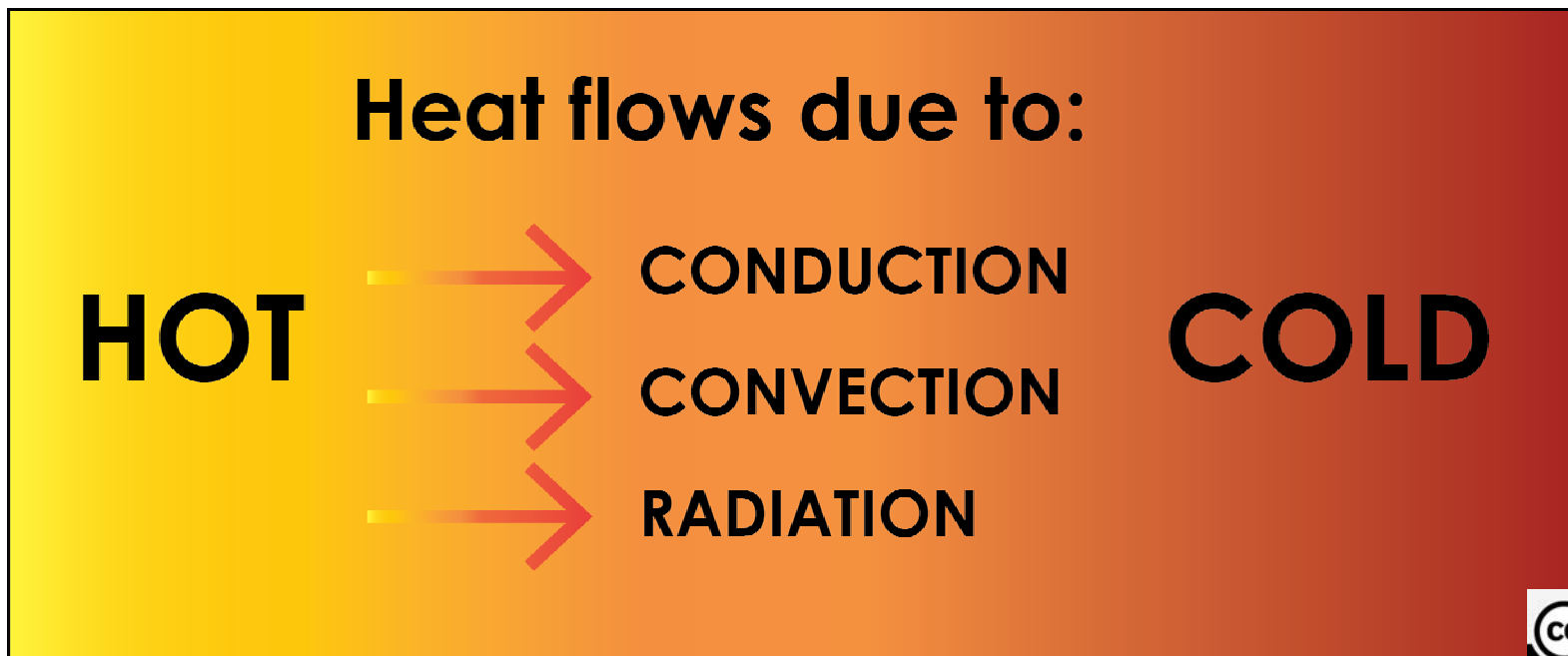
# *Heat Energy*

**flows from hotter to colder areas**  
when there is a temperature difference  
across an object or between two objects





# Heat flows three ways:



# How and when does heat energy flow???

Only when there is a **temperature difference...**

Always from **hotter to colder ...**

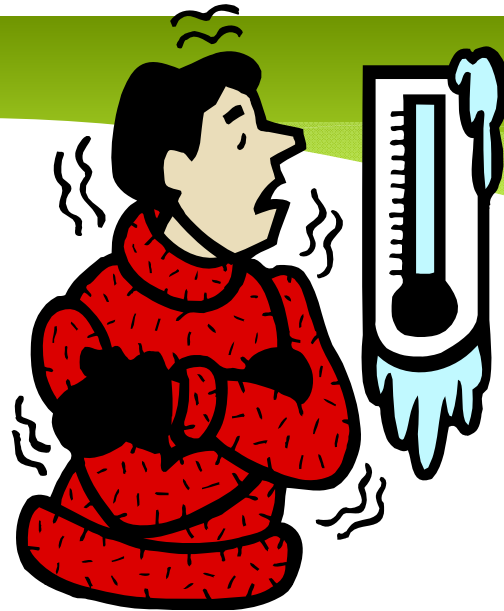
The **greater the temperature difference,**  
the **faster** it flows...

And it **flows** until **everything reaches**  
**the same temperature!**





Let's do an  
experiment...



We “**feel cold**” when...

...our surroundings are colder than we are, so heat moves from our body to our surroundings!



We “**feel hot**” when...

...our surroundings are hotter than we are, so heat moves from our surroundings to us!

# Forms of Heat Transfer...

radiation



conduction



convection





***Conduction:***  
When heat moves between  
materials that are touching







***Convection:***  
When heat moves as hot  
gases, or liquids rise

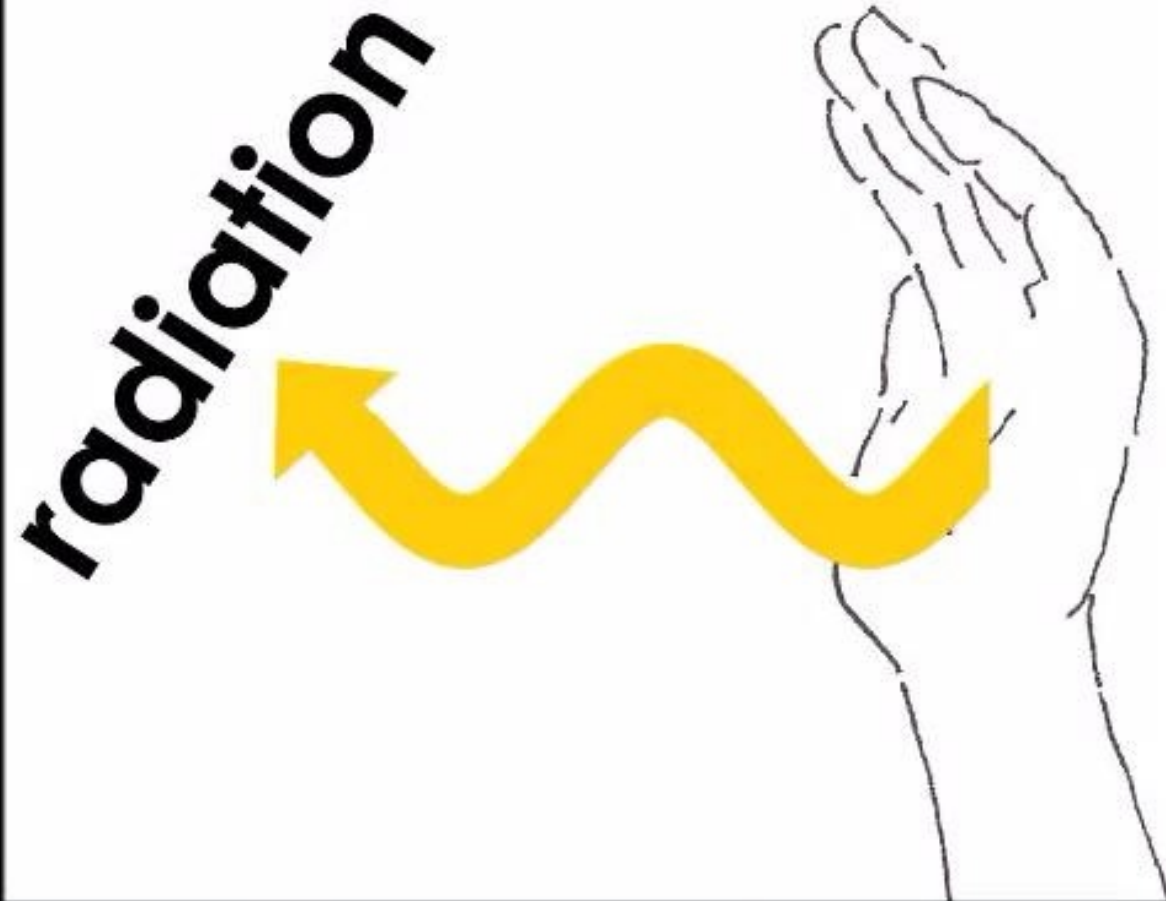




## Full of Hot Air Demo

17b



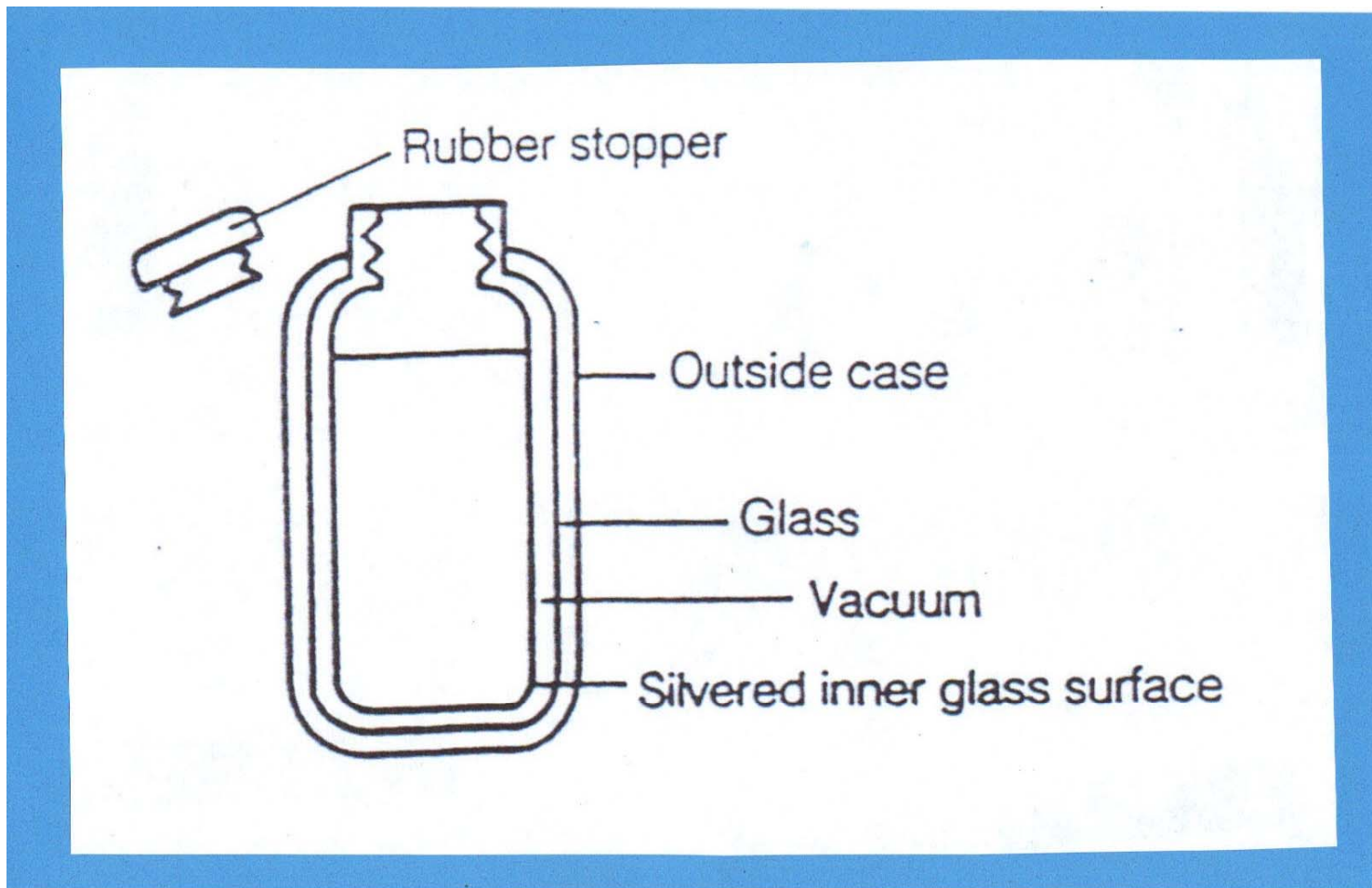


***Radiation:***  
When **heat moves in all directions**  
as invisible infrared light



What's the smartest invention ever made?

THE **THERMOS** BOTTLE!  
How does it 'know'???





Let's do another  
experiment...

Your team  
challenge: **Keep the  
hot cocoa HOT!**

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