

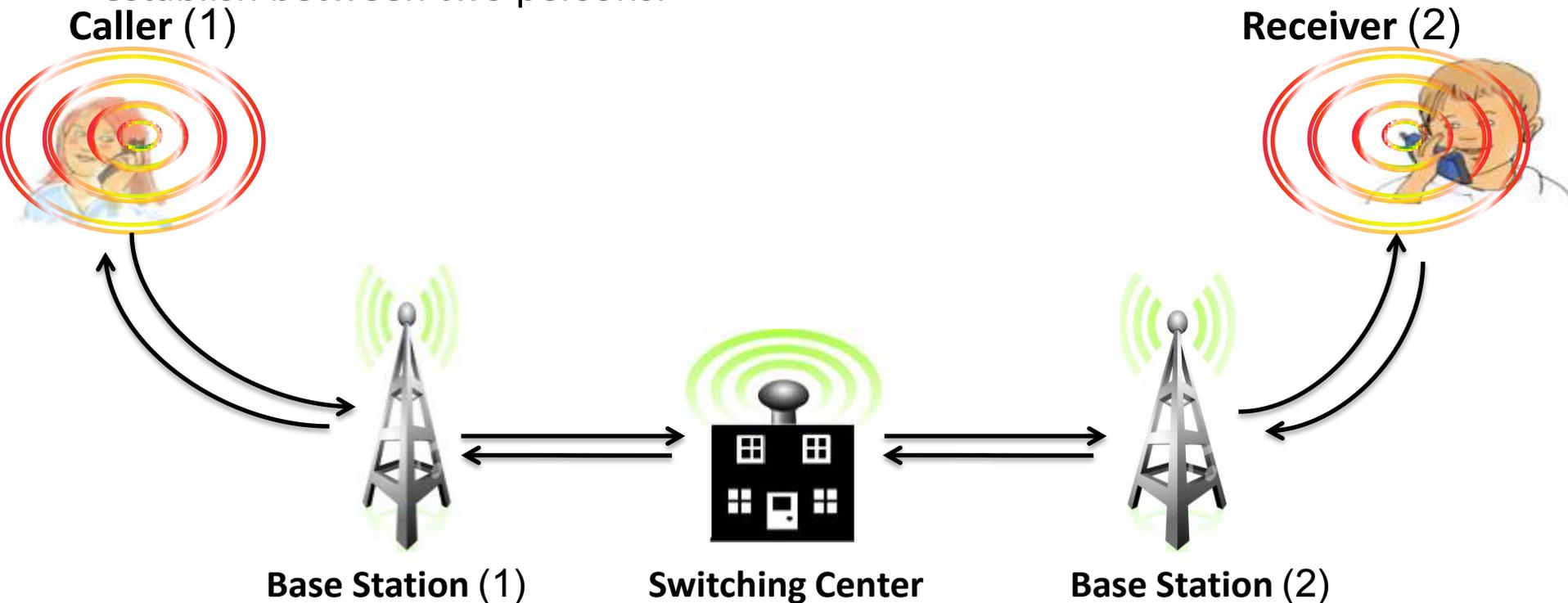
SUMMER INTERNSHIP  
REPORT

BY  
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CELL PHONE HAZARDS AND  
SAFETY PRECAUTIONS

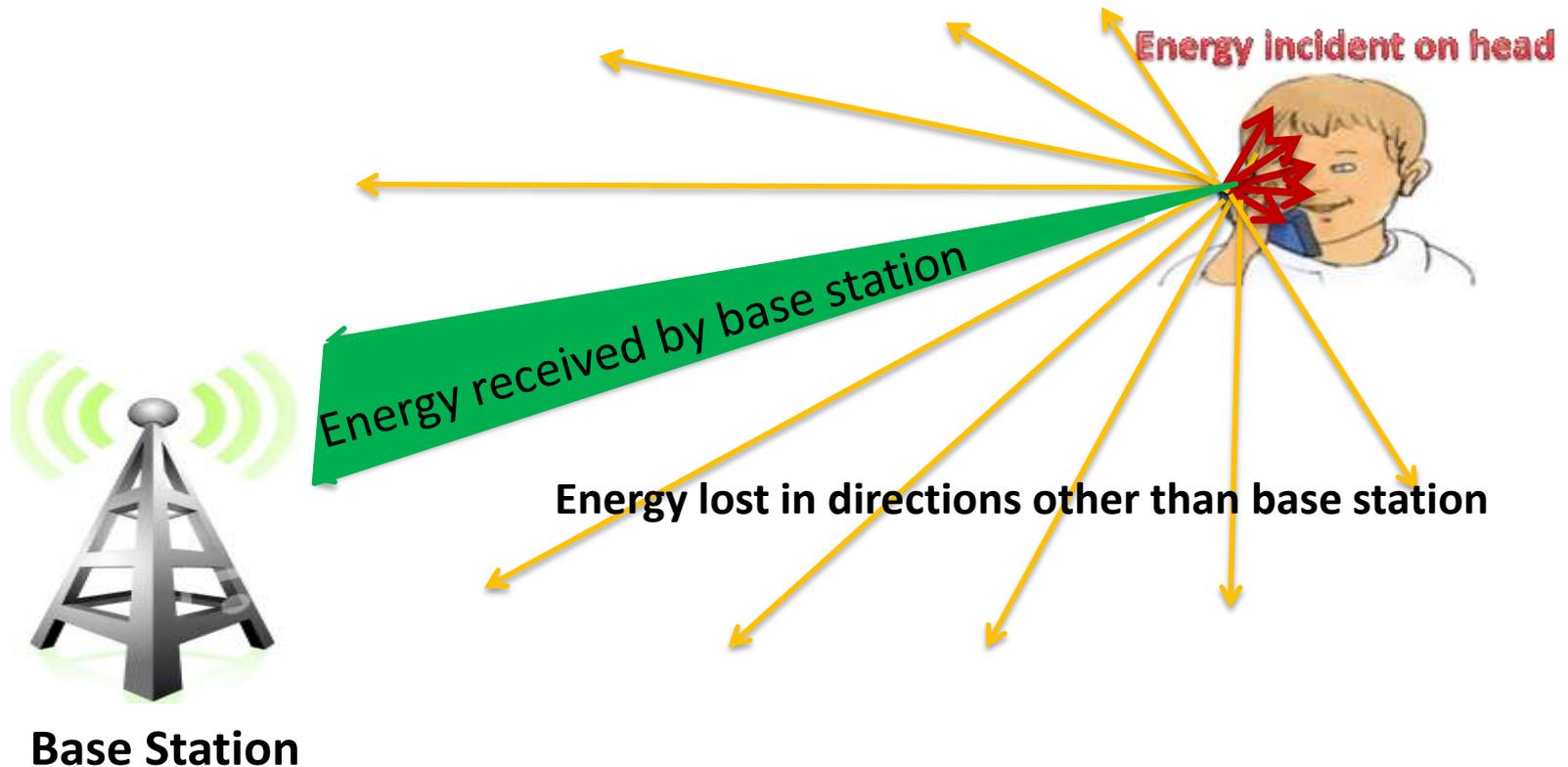
# Communication connection between two mobile

1. When the caller start the call the electro magnetic field transmit from his mobile antenna which received by the closest base station "BS".
2. Then the signal transmit from the BS to the switching center "SC" in order to check the authentication of the caller and receiver.
3. After that the SC will transmit the signal to the closest BS in the receiver side
4. Next the BS is going to transmit electro magnetic waive which should be received be the receiver mobile antenna.
5. Finally after the receiver open the line the two way communication connection establish between two persons.



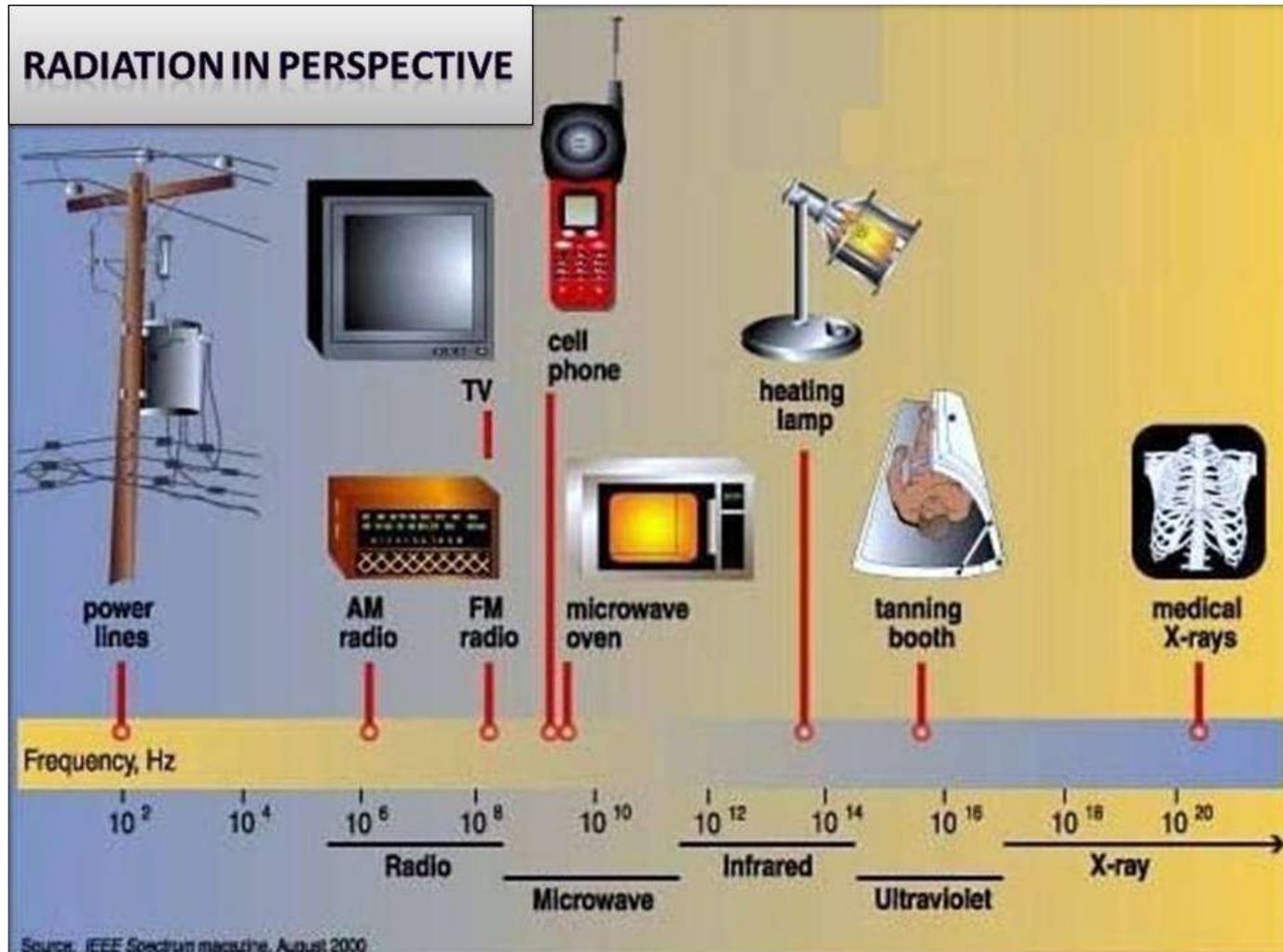
# How the radiation is produced by a cell phone?

- Cell phone radiation is transmitted by cell phone antenna in all directions
- Most of the energy lost in the space
- Part of the energy received by base station
- part of the energy is incident on human head



# Electro magnetic signal transmit from cell phone antenna

Note: The increased use of cell phones has brought about serious concerns regarding the probable health hazards. This is because mobile phones use electromagnetic radiation in the microwave range.



# Maximum Power Transmit

- The Federal Communications Commission sets specific absorption rate “SAR” standard which is acceptable power radiation for cell phones must not exceed 1.6 W/KG
- The lower the SAR the better the phone, from a potential health hazard

## There are three way to found SAR

1. From the user manual of your mobile phone.
2. Visit mobile manufacturers forum web site and select your mobile phone model  
<http://www.mmfai.info/public/sar.cfm>
3. Enter Federal Communications Commission website and Write your mobile FCC ID Number in the FCC ID  
<http://www.fcc.gov/oet/ea/fccid/>

معدلات الامتصاص المحددة

Specific Absorption Rate (SAR)

لبعض الهواتف المشهورة



iPhone 3G = 1.38 W/kg



HTC Touch = 1.25 W/kg



Blackberry Curve = 1.51 W/kg



Blackberry Pearl = 1.22 W/kg



Motorola Razr v3x = 0.14 W/kg

Samsung SGH-G800 = 0.23 W/kg



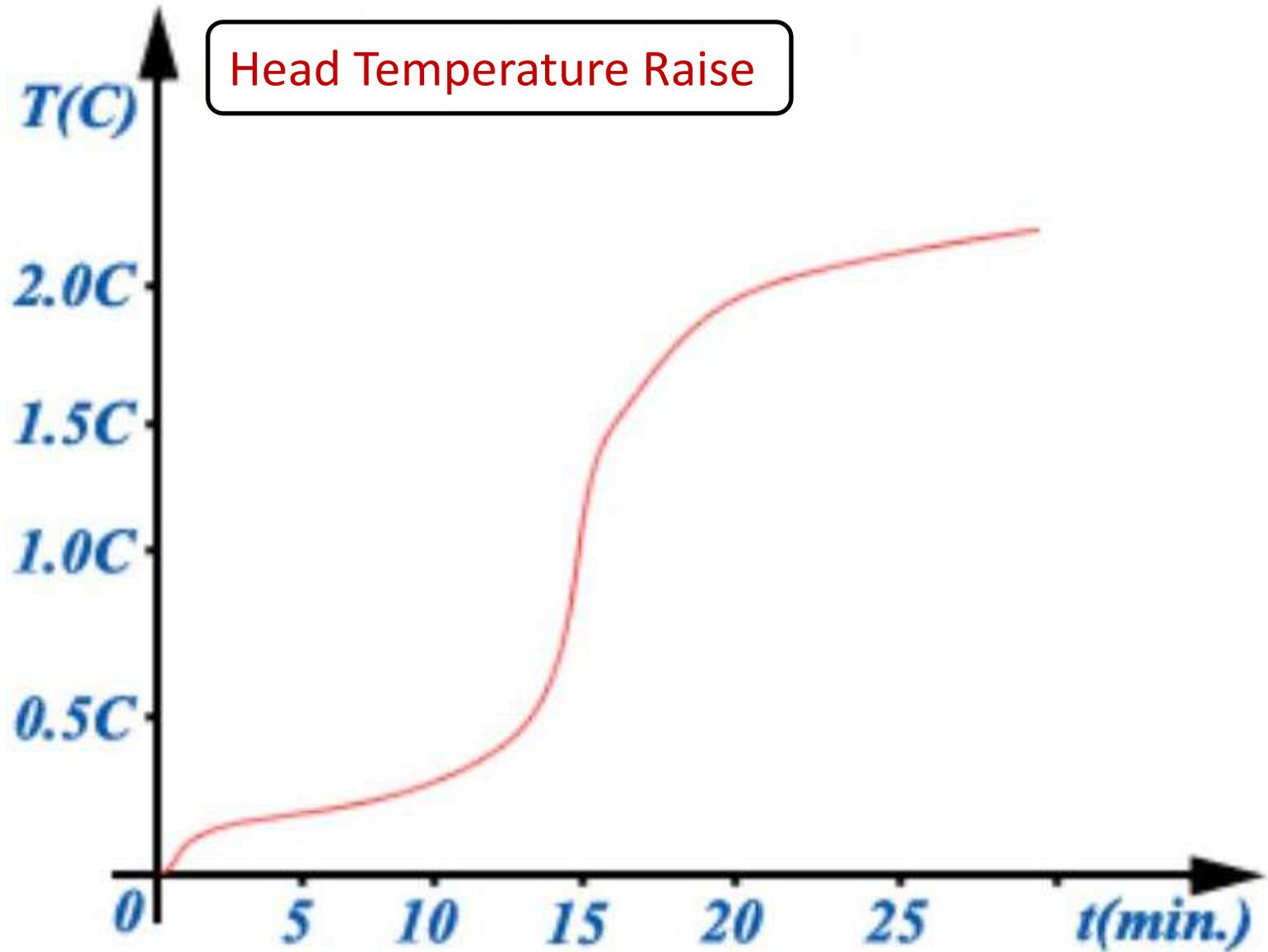
Samsung Sync = 1.51 W/kg

Nokia N95 = 1.27 W/kg



source: CNET/FCC

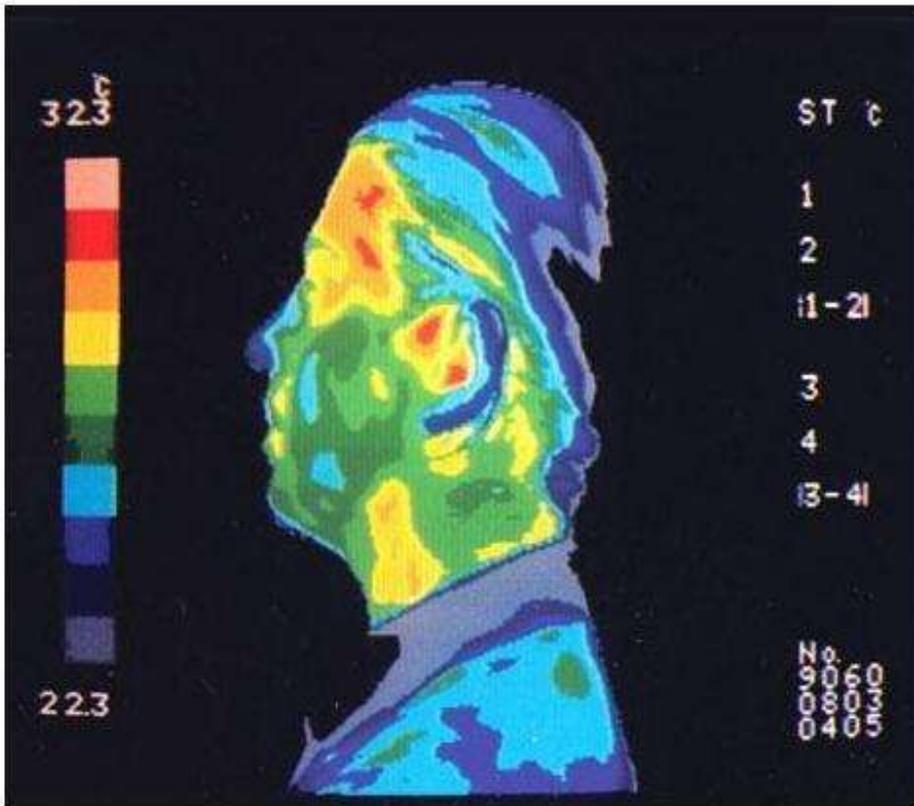
# Thermal Effect of Cell Phones



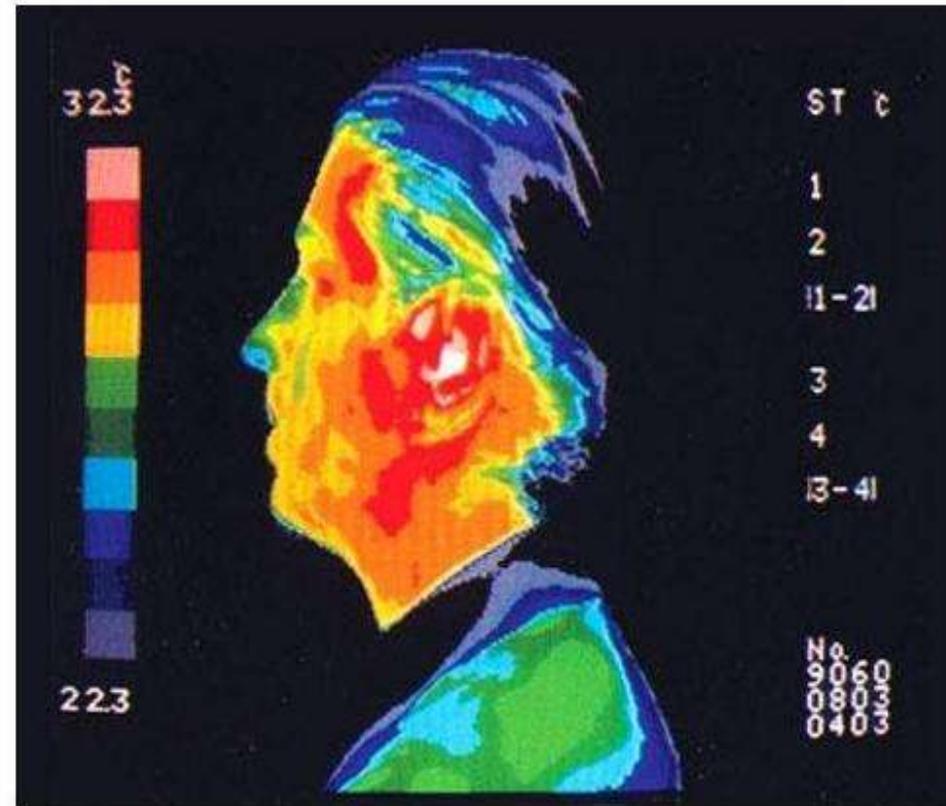
Head Temperature Raise

# Thermal Effects

Heat generated on the face by 15 minutes of cell phone use due to their electromagnetic radiation



Before using mobile phone

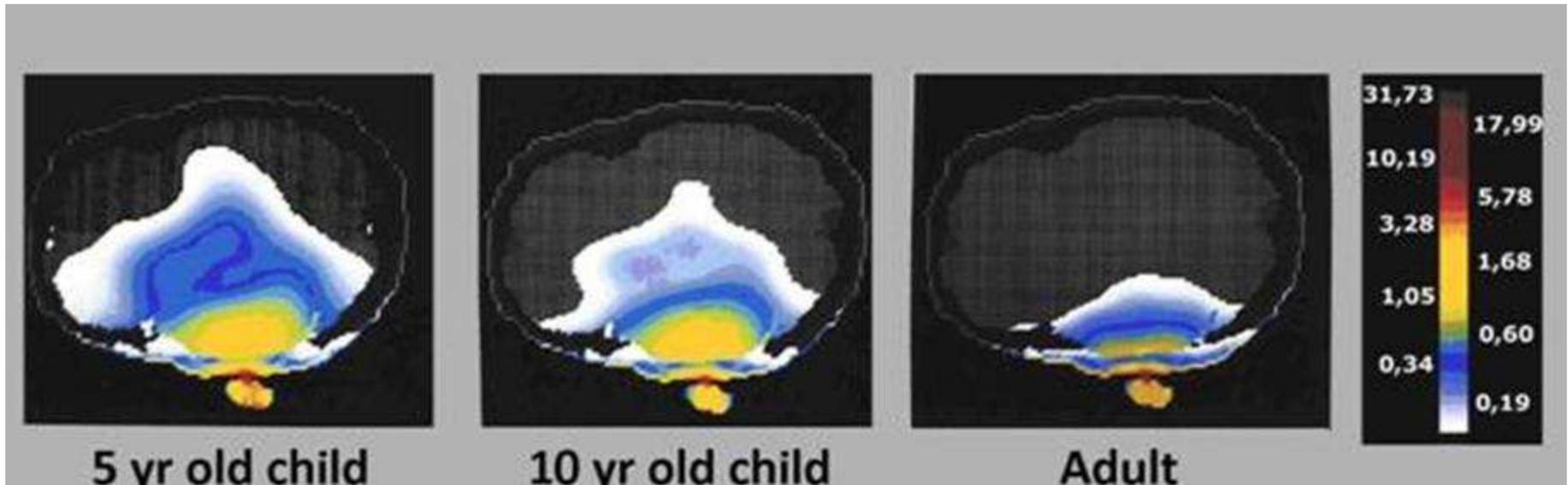


After using 15 minute mobile phone



**Can mobiles  
cause brain  
tumors?**

# Radiation Penetration in the head of an adult, ten-year and five-year old



When radiation hits the head, it penetrates the skull. The pictures above are the result of an experiment show how radiation penetrates the skull of an adult (25%), 10 year old (50%) and a 5 year old (75%). The younger the child the deeper the penetration due to the fact their skulls are thinner and their brains contain more fluid than adults'. Radio frequencies travel through children's brains much more easily and therefore increase the risk of cancer.



**The impact of cell phone radiation on humans**



**Fatigue**



**Headaches**



**Loss of sleep**



**Memory loss**



**Ringing ears**



**Joint pains**

# Consider the following when using your mobile phone

It is not only the choice of phone, but how you use it that is important when you want to control the amount of radiation you are exposed to. Here you will find a few simple tips that can considerably reduce radiation and therefore also health risks.



# Use a handsfree set

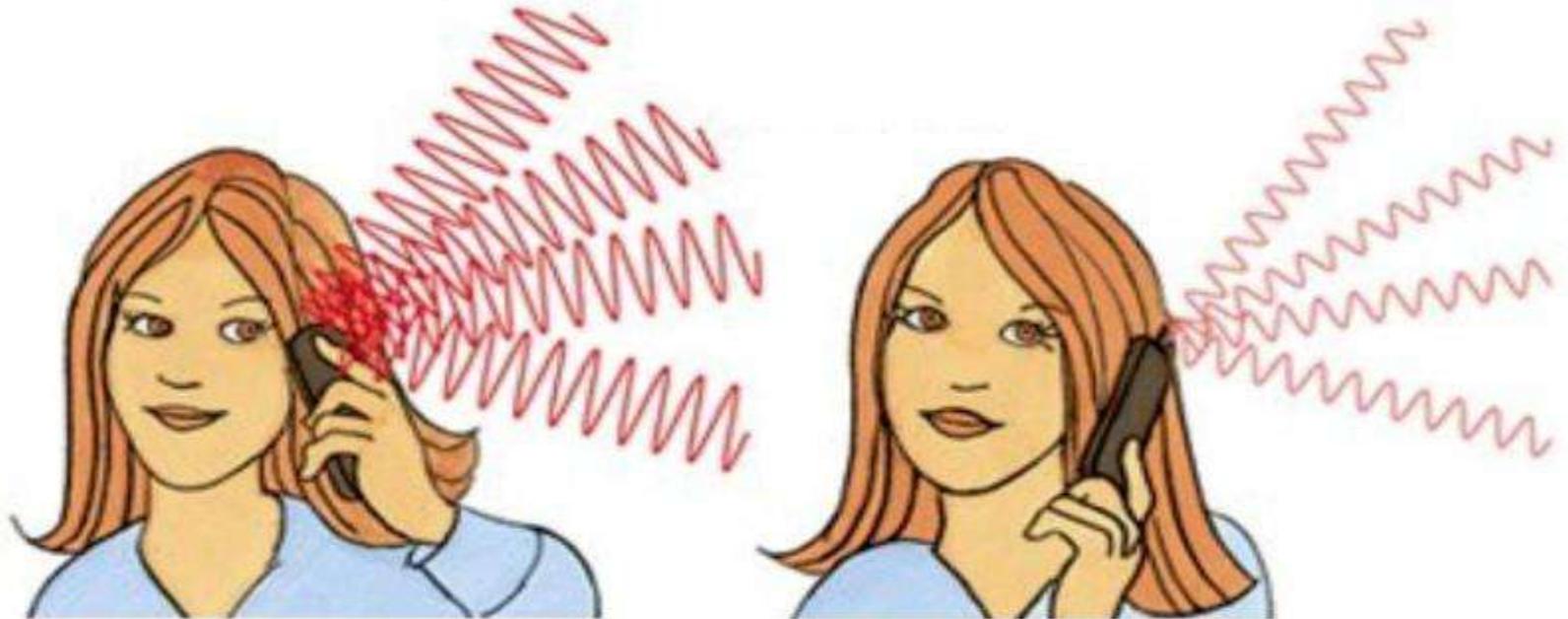
The further away from your body the phone is, the less radiation you are exposed to. Using a hands-free set is the easiest way to radically reduce the amount of radiation you are exposed to if you use a mobile phone.

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# Hold it at the bottom

By covering large areas of the phone with your hand, you reduce its ability to send and receive signals. The phone then increases its power and transmits stronger radiation to compensate this. So hold the phone as far down as possible, so it can operate at low power.



# Get in the best position

You can see the signal reception strength in the display. When reception is good, the phone reduces power and radiation. If reception is poor, the phone uses maximum power and radiation.



# Don't talk too long and Use regular phone if possible

The radiation you are exposed to is directly related to the time you spend talking on your phone. For longer calls it is safer “and cheaper” to call from a regular phone.



# Hazardous areas of use

- Don't use a mobile phone while driving a car. Stop at a safe place and talk.
- Don't use your mobile phone in places where there is a lot of electrical equipment, such as hospitals and aircraft.
- Don't bathe with your mobile phone.
- Don't let small children talk on your mobile phone for long periods. They are more susceptible than adults.



