

**Health, Safety & Environmental Bulletin No 195**

**S Martin - 17 June 2010**

**Off the Phone**



# **On Site - On the Road**

## **Off the Phone**



*Risk management is a big step towards accident prevention; however, it is dependent on the risk firstly being identified, then controlled. We need safety awareness to be **instinctive** and form an integral part of both our working and home lives; it is this, in turn, that may save the lives of others. Remember: if shared, risks can be mitigated **before** they pose a threat.*

If you have any queries regarding the Safety Bulletin content or require further information please contact any staff member of Xmo Strata Ltd.



# Vehicle Accidents

- No. 1 cause of death
- An estimated 39,000 to 46,000 people killed in vehicle accidents every year
- More than 2.2 million people injured from vehicle accidents in 2008

*Distractions  
now join  
alcohol and  
speeding as  
leading factors  
in fatal and  
serious injury  
accidents*

# Distracted Driving

- Driver distractions leading factor in fatal and serious accidents
- In 2008, 28% of all vehicle accidents attributable mobile phone use
  - 1.6 million vehicle accidents
  - 645,000 injuries
- Mobile phone users are 4x as likely to have an accident

# Millions of People are Talking While Driving

- 11% of drivers at any point during the day are on mobile phones
- 81% of drivers admit to talking on their mobile phone while driving



# Millions of People are Texting While Driving

- 18% of drivers admit to texting while driving



# How Mobile Phones Distract

- **Visual** – Eyes off road
- **Mechanical** – Hands off wheel
- **Cognitive** – Mind off driving

**CHALLENGE:** Drivers don't understand or realize that talking on a mobile phone distracts the brain and takes focus away from the primary task of driving



# The Problem

- Hands-free seen as solution and mistakenly believed to be safer than hand-held
- People recognise the risk of talking on hand-held and texting more than the risk of hands-free

*Hands-free  
devices offer  
no safety  
benefit  
when driving*

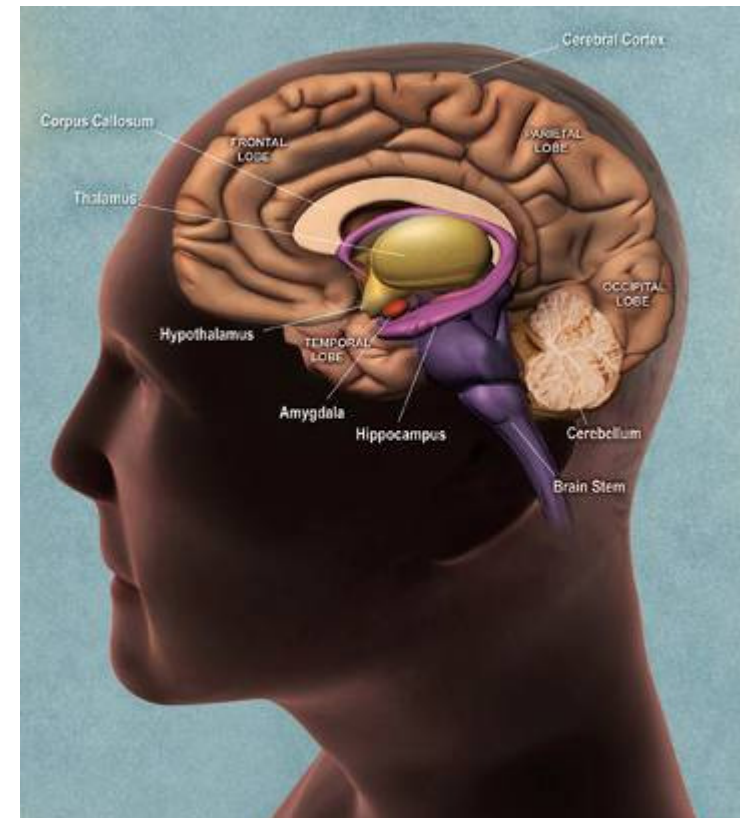
# Cognitive Distraction

- Cognitive distraction still exists with hands-free
  - Talking occurs on both hand-held and hands-free mobile phones
  - Mind focuses on conversation
  - Listen and respond to disembodied voice

*Hands-free  
devices do not  
eliminate  
cognitive  
distraction*

# Multitasking: A Brain Drain

- Multi-tasking for the brain is a myth
- Human brain does not perform two tasks at same time
  - Brain handles tasks sequentially
  - Brain switches between one task and another



**The four lobes of the brain.**

**Source: National Institutes of Health**



# Multitasking: A Brain Drain

Brain engages in a constant process to:

1. **Select** information brain will attend to
2. **Process** information
3. **Encode** to create memory
4. **Store** information

It must also:

5. **Retrieve**
6. **Execute** or act on information

When brain is overloaded these steps are affected

# Multitasking: A Brain Drain

## Encoding Stage

- Brain filters information due to overload
- Drivers not aware of information filtered out
- Information does not get into memory
- Drivers miss critical information on potential hazards



**Inattention blindness and encoding**  
**Source: National Safety Council**



# Multitasking: A Brain Drain

- Brain juggles tasks, focus and attention
- Brain switches between primary and secondary tasks
- Inattention blindness
  - When people perform **2 cognitively complex** tasks (driving and using a mobile phone), causes brain to shift focus
- Bottleneck
  - Different regions of brain must pull from a shared and limited resource for unrelated tasks

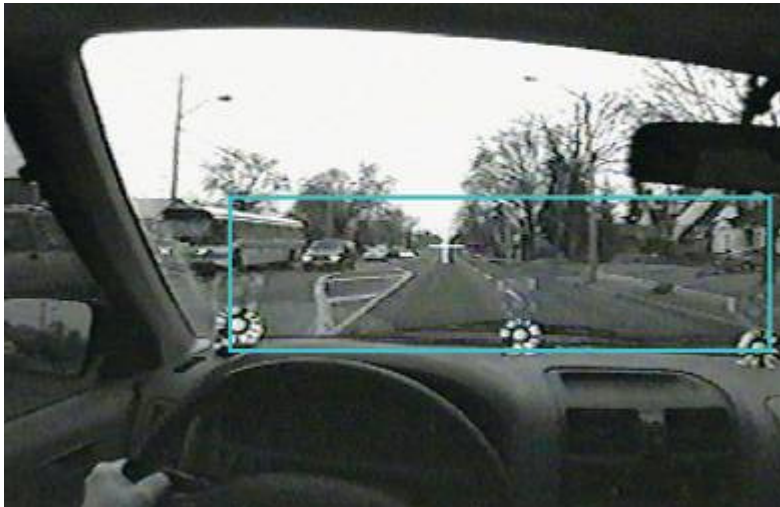


# Inattention Blindness

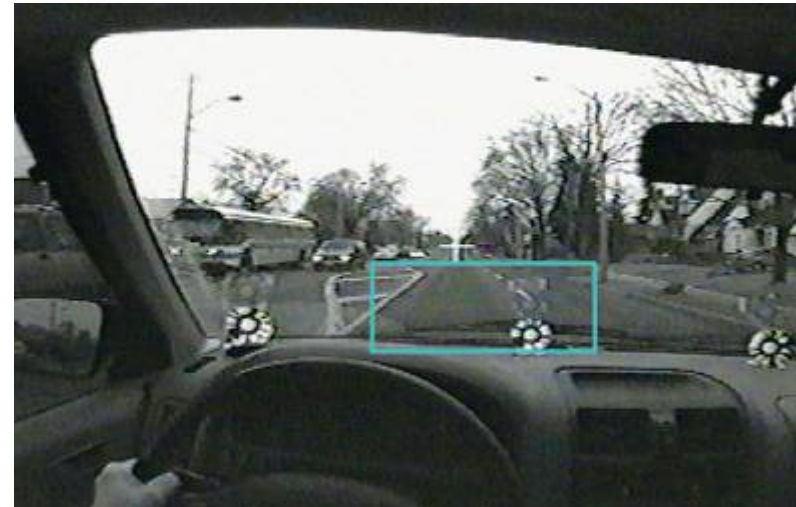
- A type of cognitive distraction
  - “looking” but not “seeing”
- Hands-free drivers **less** likely to see:
  - High and low relevant objects
  - Visual cues
  - Exits, red lights and stop signs
  - Navigational signage
  - Content of objects

# Inattention Blindness

**A narrowed scope**



**Where drivers not using a hands-free mobile phone looked**

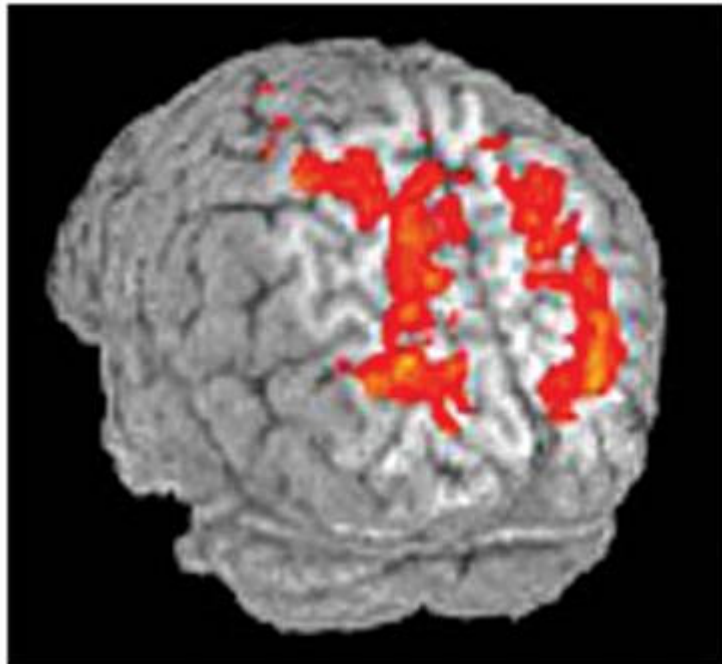


**Where drivers using a hands-free mobile phone looked**

# Multitasking: Impairs Performance

- Carnegie Mellon University Study (2008)
- Took fMRI pictures of brain when drivers listened to sentences while driving a simulator
- You can literally see the results...

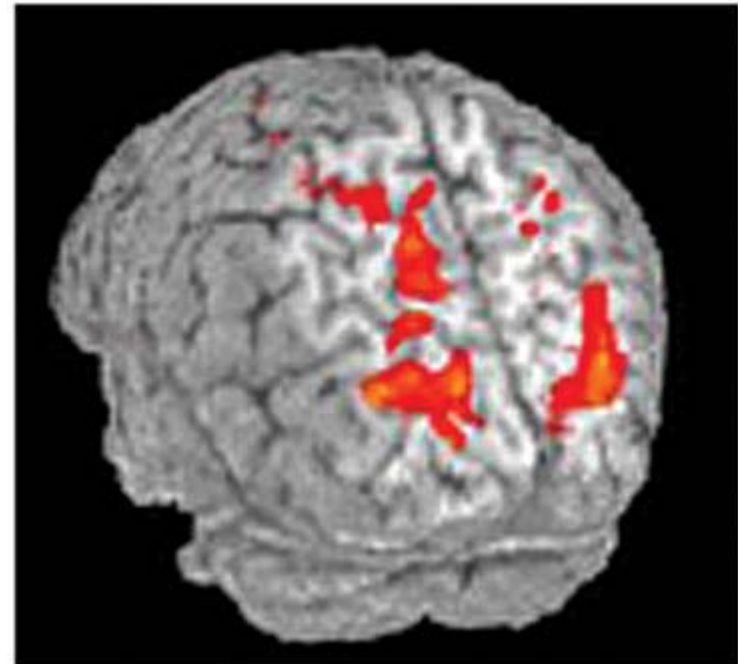
**Driving alone**



L

R

**Driving with sentence listening**



L

R

**Functional Magnetic Resonance Imaging**

**Source: Carnegie Mellon University**

# Multitasking: Impairs Performance

- Just listening to sentences on a mobile phone decreased activity by 37% in the brain's parietal lobe which perceives movement, integrates sensory information and also has importance for language processing
- Listening and language comprehension draw cognitive resources away from driving
- Also decreases activity in brain's occipital lobe which processes visual information

# Multitasking: Impairs Performance

- We can walk and chew gum safely because its not a cognitively-demanding task
- Even mobile pedestrians using a mobile phone act unsafely

They are less likely to:

- Look for traffic before stepping into street
- Look at traffic while crossing street
- Notice unusual objects placed along their path

# Multitasking: Impairs Performance

- Driving involves a more complex set of tasks than walking:
  - Visual
  - Manual
  - Cognitive
  - Auditory
- A driver's job is to watch for hazards, but this cannot be done when brain is overloaded

# Mobile Phone: Driver Risks

- Inattention blindness
- Slower reaction/response times
- Problems staying in lane

# Passenger Conversations

- Adult passengers share awareness of driving situation
  - a safety benefit
- Front seat passengers reduce risk of having an accident by 38% compared to mobile phone conversations
- Adults with passengers have lower accident rates than adults without passengers
  - Not true for novice teen drivers

# Mobile Phone Ban



**No Mobile Phones  
While Driving**



**No Mobile Phones  
On Site**



More than 1.6 million accidents are caused by mobile phone use and texting while driving each year



Joe, 12



Bailey, Merideth,  
Hannah, Sara and Katie



Cady, 16



Erica, 9



Jean and Jay, 58

# Countless lives have been lost as a result



Linda, 61



Jason, 38



Lauren, 17



Matt, 25



Frances, 13



Jordan, 18



Help save lives  
Tell everyone you know

*On Site On the Road - Off the Phone*