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VDUs AND YOUR HEALTH

This document provides information on Visual Display Units (VDUs) and health issues concerning radiation, eyes, skin rashes and reproduction.

For information on workplace design and vision, muscle strain, discomfort and stress refer to the WorkSafe Western Australia publication "Occupational Overuse Syndrome Keyboard Operators".

Under the Occupational Safety and Health Act 1984 and the Occupational Safety and Health Regulations 1996, employers are required to provide, where practicable, a working environment in which employees are not exposed to hazards (Section 19). Employees are required by the same Act to take reasonable care to ensure their own safety and health at work (Section 20).

If you have problems in these areas, you should contact your safety and health representative.

The most commonly asked questions about Visual Display Units (VDUs) and health are:

**Do VDUs emit radiation?**

Like any electrical appliance, VDUs emit electromagnetic radiation (EMR) in the form of electric and magnetic waves that produce the following fields:

- direct current (DC) electrostatic;
- extremely low frequency (ELF) and very low frequency (VLF) magnetic;
- very low frequency (VLF) pulsed electric.

EMR from VDUs are non-ionizing; that is, they are low frequency, long wave-length and low energy electromagnetic waves that are unable to cause ionization (to remove an electron from an atom) while passing through the body. This is unlike ionizing radiation, such as X-rays, which have enough energy to break up atoms and molecules. Levels of other non-ionizing radiation, including ultraviolet, microwaves, visible and infrared radiation, are below hazardous levels.

**How does a VDU compare to a TV set?**

Both operate on the same principle - they are a picture tube or cathode ray tube and therefore emit the same types of fields. TV sets, however, generally have larger screens - and usually in colour - and they require larger voltages and currents than VDUs. That means electric and magnetic fields are slightly higher than those from VDUs.

But TV viewers' exposure to these fields is lower because they are usually sitting several metres away from the TV.
How do flat screen displays compare with regular VDUs?

Flat panel displays, i.e., liquid crystal (LCD), plasma (gas discharge) and electroluminescent (ELD) displays, operate on different principles to conventional VDUs.

LCD, plasma and ELD panels do not use a picture tube, deflection coils or a flashback transformer and so produce little or no electric or magnetic fields.

Do VDUs emit ultrasound?

High frequency sound or ultrasound can be produced by mechanical vibrations associated with the electron beam scanning control circuits. However, measurement of ultrasound levels from VDUs has shown they are very low and contribute relatively little to overall office noise levels.

How can electromagnetic fields from VDUs be measured?

With either an electric field sensor, a magnetic field sensor or an instrument to measure the DC charge on the screen.

However, since emissions from a VDU do not increase with the age of a unit, it is not necessary to continually monitor VDU emissions after initial testing.

How can exposure to electric or magnetic fields be reduced?

Exposure to VDU fields can be reduced by either shielding the source of the fields or reorganising the workplace to reduce avoidable exposures.

Shielding

Most VDUs are shielded by the manufacturer to reduce electromagnetic emissions that may affect electronic components.

A magnetic field is more difficult to shield. The special metals needed are expensive and must be thick enough to be effective. Therefore, magnetic fields are seldom shielded.

Electrostatic and VLF electric fields at the front of the VDU screen can be reduced by transparent conductive mesh filter placed over the screen but these are not necessary since the electric field at the operator's position is very low.

Reducing or avoiding exposure

High levels of electric field may occur at the side of a VDU near the fly-back transformer, though the field is negligible at the operator's position. Furthermore, the field strength decreases rapidly with distance from the terminal.

It is advisable, therefore, to organise VDU equipment to avoid unnecessary operator exposure from adjacent VDUs. This can be done by positioning the operator at least an arm's length from the sides or rear of nearby terminal.
**Should operators wear a lead apron?**

No. A lead apron provides no protection against electric or magnetic fields. A heavy lead apron exerts pressure on the abdomen and is not recommended for pregnant women.

**Do VDUs damage vision?**

Ultraviolet, visible and infrared emissions from VDUs have been measured and these emissions have been found to be over 100 times less than the recommended maximum exposure limits. Reports of cataracts due to operating VDUs have not been substantiated by scientific evidence. The level of the radiation emitted by VDUs does not cause cataracts.

**Can VDUs cause skin rashes and eye irritation?**

VDU operators have been reported to suffer skin rashes on the face and hands and eye irritation.

In dry conditions, it has been reported that the electrostatic field between the VDU screen and the operator causes charged airborne particles to be attracted to the operator's face and hands. Some people believe these particles can cause skin and eye irritation in sensitive individuals. However, there is no proof of this.

Although the positive charge on the VDU screen may result in a reduction of negative ions in the air around the operator and a change of the ionic environment in front of the VDU, caused by the lack of electrostatic field, there is no reliable evidence to indicate that negative ions contribute to ill health.

**Do VDUs cause birth defects or miscarriages?**

Seven major studies performed throughout the world examining the link between VDU use and birth defects or miscarriages have concluded there is no causal relationship.

**Policy for pregnant women**

Although VDUs do not pose any known risk to the health of the foetus, it is suggested that to minimise anxiety, workplaces where VDUs are used have a policy for their use by pregnant women. Such a policy could be negotiated between employees and the employer, as anxiety may pose a health risk even though VDUs do not.

**Do VDUs cause Cancer?**

A link with cancer is not supported by current scientific evidence.
References

For further information on Visual Display Units, refer to the following documents:


