Office Copying Machines

The use of office copying machines on campus is widespread and many queries have been raised as to the health risks associated with their use. Generally, copying machines may be operated without any detrimental effects to health by following a few basic principles. However, discomfort or health effects may arise if machines are poorly sited, poorly maintained or used by operators for long periods continuously. This guideline outlines some potential health hazards associated with the operation of copying machines and precautions that can be taken to reduce those hazards.

Office Copying Machines

The term “office copying machines” is used to describe equipment such as photocopiers, laser printers, facsimile machines, diazo printers and spirit duplicators. Microfiche and microfilm readers that have an inbuilt photocopying facility can also be classified as office copying machines

Hazards Associated With Office Copying Machines

A number of hazards have been associated with office copying equipment. These are outlined below.

Ozone
Electrostatic photocopiers produce small amounts of ozone which, if present in sufficient quantities can irritate the eyes, lungs, throat and nasal passages

Selenium and Cadmium
The photoconductive material in photocopiers is usually selenium, however cadmium, sulphide, zinc oxide and organic polymers are also used. Trace amounts of these materials can become airborne where they can irritate the skin, throat and nasal passages

Toner materials
Toners contain a colouring agent called carbon black. In the past, impurities found in the carbon black were found to have some inherent health hazards. However, toners manufactured today have few, if any, impurities. Toner dust released from dry photocopying machines may irritate the nose and throat, resulting in coughing and sneezing

Solvents
Solvents such as ammonia, industrial methylated spirits, isodecane, cyclohexane and formaldehyde are used in wet process copying machines. In low concentrations, vapours from these solvents can create an odour problem. In higher concentrations, solvent vapours can lead to headache, poor concentration and dizziness. Repeated exposure of solvents to unprotected skin can lead to hardening and cracking of the skin’s surface

Heat
Burns from hot components may occur during operations such as clearing paper misfeeds. Heat generated by photocopiers can be a source of discomfort

**Light**
Fluorescent, metal halide or quartz exposure lamps are most commonly used in photocopiers. Eye damage has not been shown to be caused by photocopier operation. Ultraviolet light does not pass through the document glass. Discomfort from the intensity of light may be avoided by closing the document cover or using the automatic document feeder.

**Noise**
Noise levels generated by office copying machines while not considered to pose a hazard to workers’ hearing may be a nuisance to nearby workers

**Musculoskeletal discomfort**
Musculoskeletal discomfort may arise from continuous photocopying, collating copies and attention to equipment. Sustained and repetitive postures may lead to muscular fatigue.

**Prevention of Hazards to Health**
The majority of hazards outlined above can be controlled by following some basic principles

**Selection of copying equipment**
Ideally, purchase photocopiers with low ozone emission specifications or ozone filters. Select copiers with containerised toner systems and automatic shut down devices on waste toner compartments to reduce dust emissions. Select machines of appropriate height so as to avoid stressful sustained and repetitive postures

**Location of copying equipment**
So as to avoid a build up of contaminants such as solvent vapours, ozone or dust, all copying equipment should be located in a well-ventilated area. A well ventilated area is one which has good natural ventilation, that is, open windows, louvres or doors preferably located on either side of the room. Where copying equipment is located in an enclosed room and used frequently, then the room may need mechanical ventilation. Where high volume photocopiers are used, it may be necessary to locate the photocopiers in a room separate from other work areas. The Occupational Health and Safety Unit is able to provide advice regarding the need for mechanical ventilation.

Ideally, copying machines are best located away from work desks to reduce noise to nearby workers.

**Maintenance of equipment**
Regular maintenance of copying equipment by a trained technical service operator will help to control release of contaminants due to poorly operating equipment. Maintenance log books should be kept for each machine and should be available for staff to review

**Personal protective equipment**
Where necessary, the appropriate personal protective equipment should be made available. For example, rubber gloves should be worn while cleaning up or disposing of spilt fluids or spent toner

**Design of equipment and workplace**
The positioning and height of various components should be such that sustained and repetitive postures are avoided. Photocopying and collating should form only a part of a person’s duties and should not be carried out continuously for long periods.
Summary
The following checklist and diagram summarise the above points.
- Equipment should be installed in a well ventilated area to facilitate safe removal of any dust, gases or vapours.
- High volume photocopiers installed in an enclosed room, may require mechanical ventilation.
- Allow adequate space around copiers, for good airflow and facilitate maintenance.
- Equipment should be regularly maintained.
- The working surface of the copier should be at a comfortable height for the operator.