Water Coolers and Dispensing Machines:

Please note – this guidance has mainly been superseded by the introduction of the new Drinking Water policy by the Estates and Buildings Department in 2009 which only allows bottled or mains fed water machines in special circumstances. Please see http://www.docs.csg.ed.ac.uk/EstatesBuildings/Policies/Drinking_water_policy.pdf for more information.

Hazards and Misconceptions

There has been a substantial increase, in recent years, in the use of water coolers and water dispensing machines in the workplace and it is noted that this University is no exception to that trend. Whilst these machines have a place, under certain circumstances, in providing suitable refreshment to staff their use is not without hazard and in many cases the perception of need for these machines is misguided.

Under the requirements of the Workplace (Health, Safety and Welfare) Regulations 1992 employers have a duty to provide an adequate supply of wholesome drinking water. In this University the Estates and Buildings Department have ensured this by supplying cold water that is of potable standard throughout the University estate, be its origin from a suitably maintained tank or a mains pipe supply. Therefore, unless there occurs some external problem in the supply of water from Scottish Water to the University, which would of course be of a temporary nature and beyond the University's control, all cold water supplies within the University are supplied to drinking water standard. However, the environment within which a particular supply point is situated, rather than the quality of the water itself, may dictate that it is not a supply suitable for drinking water, such as those sited in sanitary accommodation, laboratories, etc., unless they are clearly labelled as drinking water and are separate from work sinks, or wash hand basins.

Taste is however a subjective sense and bears little correlation to safety, what may taste acceptable to one person may not be acceptable to another, but may nevertheless remain safe e.g. personal likes/dislikes to certain flavours of fruit drinks. So it is with water, and the main causal parameter of water being perceived as exhibiting a poor taste is temperature, if drinking water is not cold it will, generally, not taste pleasant or acceptable. Water that originates from a tank supply, or water that is mains fed but is subject to lengthy journeys in internal pipe runs, may gain heat from the building surrounds and adjacent services, and whilst being perfectly safe, may exhibit a taste that is perceived by some as being unpleasant.

It is therefore mostly the cooling effect on water supplied by water dispensing machines, be they bottled or pipe fed, that results in water supplied by them being perceived as of better quality than the tap supplied water. Indeed water supplied by means of the public water supply is subject to more safety checks than is bottled water, these tests being undertaken at treatment works, service

reservoirs and at consumers taps for bacteriological quality, with the results available on public records. The Water Supply (Water Quality) (Scotland) (amended) Regulations 2001 implement in full the EC Directive 98/83/EC on `water intended for human consumption', but the bacteriological parameters of the Directive only applies to bottled water for 18 hours after its bottling.

It is suggested that placing tap water into screw top bottles and storing in a fridge for future use can achieve the same perceived quality of taste as commercially supplied bottled water, or that cooled in a dispenser.

In some areas of the UK chlorine can be tasted in the supplied water at the consumers tap, some people like this as it gives them a feeling of safety, but most do not, this is not perceived by most as a problem in this area of Scotland, but of course some are more sensitive to chlorine than others and as already stated taste is a subjective sense. If chlorine taste is a problem, place a clean jug of water in the refrigerator for about two hours after which the chlorine taste will have disappeared, and the water will be at a cool drinking temperature.

Note of law

Health and safety legislation requires that an employer provide an adequate supply of wholesome drinking water and it is explained earlier how the University discharges its duty in this respect. However, any other type of water, or other beverage, supplied by an employer must be supplied in a safe manner and condition, where this supply has been arranged at College/School, or equivalent, level the onus for ensuring the safety status of the supply and the safe use of the equipment lies, as with other health and safety matters, with the Head of College, School, or similar Management Unit. The Management Unit must therefore have in place a system which ensures that any dispensing machine is maintained in a safe manner, this not only in respect of mechanical and electrical parameters, but also including regular cleaning and testing to prevent bacterial contamination, and training of users to ensure safe bottle changing, etc., if applicable. Guidance on these parameters is set out below.

Bottled dispensers

One of the main hazards associated with the use of bottled dispensers relates to the manual handling of the bottles themselves. The Health and Safety Executive and some Trades Unions have highlighted the number of over three-day absence injuries contributed to by the activity of bottle changing, this task often being left to the slightly built female secretary who has had no training in safe lifting techniques.

Typically a standard bottle used in a water cooler weighs approximately 18.5 kg, these may require to be lifted from the floor to above waist height in order to affix to the dispenser, and often have to be turned through 180^{o} in the process, thus there is present in this activity a real risk of musculoskeletal injury. Therefore, a risk assessment requires to be undertaken in compliance

with the requirements of the Manual Handling Operations Regulations 1992, where the risk assessment shows it necessary, action should be taken to reduce the risk of injury. Only persons who have received basic manual handling training from their School, or equivalent, moving and handling trainer/assessor should be required to change bottles. Personal capability should be assessed and any pre-existing medical condition that may place the person `at risk' taken into account. Manual handling Risk Assessment Forms may be downloaded from the Health and Safety Departments website.

Bottles should be stored, at waist height if possible, in a cool dark area away from direct sunlight and sources of heat, and they should be used in strict `best before date' rotation. Do not store water for more than 30 days. Like many other food products, bottled water normally contains low numbers of harmless bacteria as processed by the bottling company, but during prolonged storage at room temperatures, these bacteria can multiply rapidly.

The dispenser should not be located in a position where the bottle is exposed to direct sunlight. It is also suggested that bottle type dispensers should not be considered unless there is significant usage and therefore a good turnover of bottles, as when the water is dispensed the water is replaced by ambient air, including any contaminant in the air, if the water is then left for long periods between use bacterial growth may occur. This advice is consistent with that given for other food products that may remain wholesome for several weeks or months in an unopened container, but once opened the advice is usually to consume within two or three days.

Mains supplied water coolers

These machines are connected to the mains water supply and typically chill and filter the water as it passes through the machine. Manufacturers claim that because of the filtration, UV sterilisation and direct chill technology that they produce water that is chilled, chlorine free and bacteriologically safe.

These machines have the considerable advantage of avoiding the hazardous manual handling of bottles, the need for suitable bottle storage space, and management of a system to ensure correct rotation of use. They also probably have a considerable long term economic advantage over bottle dispensed machines, as there is no ongoing commitment to purchase bottles, but they do rely for their operation on there being a mains water supply available near at hand.

Maintenance and cleaning of water coolers and dispensers

If the inner components of a vending machine become contaminated this can prove difficult to eradicate, this particularly in the case of some harmful bacteria such as coliform organisms. There have been several cases noted of drinks machines being infected with harmful bacteria, including E.Coli, (information published by Unison), and the author has experience of a situation where following an outbreak of stomach upset in a group of workers,

the shared water dispenser was found to contain an unacceptably high count of coliform bacteria.

Contamination, such as that outlined above, occurs mainly through failure to thoroughly clean the dispensers on a regular basis and/or as a result of human contact by someone with poor personal hygiene standards. The latter can happen when the spout is touched whilst taking a drink, other components are touched whilst changing bottles, or inner components are touched during maintenance work and the person(s) concerned have not washed their hands after toilet breaks. Hands, or any receptacle that has previously come in contact with your mouth, should not touch the water cooler spigot.

It is suggested that a maintenance agreement is entered into with the supplier of the equipment that includes regular thorough cleaning of the internal and external components and testing of water quality. You may wish to consider regular external user cleaning of the machine, either at every bottle change or for mains coolers every three/four weeks. A broad-spectrum cleaner sanitiser should be used that is suitable for hard surfaces, food equipment and utensils.

These machines require to be tested, before first use, and at regular intervals for electrical safety, this should be arranged through contact with the Estates and Buildings Department.

Further reading

- Workplace (Health, Safety and Welfare) Regulations 1992 - Guidance for the Education Sector, available at:

http://www.hse.gov.uk/pubns/iacl97.htm

- Drinking water regulation and consumer choice - paper by Michael Rouse, Chief Inspector, Drinking Water Inspectorate, to the UK Bottled Water Conference 1999, available at:

http://www.dwi.gov.uk/papers/dwrcc.htm

- BBC News `Bottled water a waste of money' at:

http://news.bbc.co.uk/1/hi/world/europe/1309841.stm

	
Typical bottle cooler/dispenser	**Typical mains supply cooler/dispenser**

For advice on any of the above topics please contact Candice Schmid, University Health and Safety Adviser (occupational.hygiene@ed.ac.uk).