

## EUREAU POSITION PAPER

### POINT OF USE WATER TREATMENT FOR DOMESTIC PURPOSES

#### What is point of use treatment ?

For the purpose of this paper, point of use treatment is defined as the fitting of a device to purify water at the point that it is used. There are two situations in which such devices might be installed:

- Some are sold for use in properties already receiving *potable* public water supplies
- Some are used at properties in isolated rural areas where public supplies are not available and *untreated* drinking water is taken from a well or spring.

Technically these treatment units can be separated into:-

“point of entry” devices, where water is treated as it enters the building and thus is supplied to all taps in the property; and

“true point of use” devices which are fitted only to one tap, usually in the kitchen..

#### Point of use devices for untreated raw water

Treatment of raw water for domestic purposes is a specialist task which may be subject to specific Regulations in Member States. In all cases property owners should seek advice from the appropriate authorities before installation, and ensure that any device is fitted by reputable suppliers to the necessary standards. Once installed the device will need to be maintained in line with recommended frequencies and possibly subject to water quality monitoring to ensure effective operation.

#### Do point of use treatment units need to be fitted to public water supplies ?

*Almost certainly no.* All European public water supplies are subject to appropriate treatment to ensure that they meet strict quality standards laid down by the European Union, and national authorities. European water suppliers take great care to treat water to a very high quality. *In some circumstances, point of use devices can lead to deterioration of water quality*

In very special circumstances some customers, such as those using home dialysis units, may need water purified to a higher standard than normal tap water, in which case your doctor or health authority will advise you.

## **Advice to customers who have any concerns about water quality**

If anybody is concerned drinking water quality, they should first contact their local Water Supply Company who will provide detailed information about the quality of the supply.

If individuals still feel that a filter will improve the taste or appearance they need to be certain of:

- what they actually want to remove from the water
- whether the filter is capable of achieving this.
- whether the design of the unit could lead to water quality deterioration.

## **What type of point of use treatment units are available?**

Jug filters: Small portable units that fit on top of glass or plastic jugs. The filtered water should be kept in a refrigerator and like any other food used as soon as possible to prevent bacterial contamination.

Plumbed-in filters: Usually larger and much more expensive than jug filters. Some are permanently plumbed into the cold water supply pipe. Unless there is a separate tap they treat all the water, whether for drinking, washing up or any other purpose. Others can be attached to the cold water tap, but the supply can be diverted so that it does not pass through the filter.

Water Softeners : These are designed to remove calcium or other naturally occurring hardness salts.

Disinfection Units: These are designed to kill or remove harmful micro-organisms, for example by irradiation with ultra violet light.

*All types must be properly maintained in accordance with operating instructions and cartridges replaced regularly.*

## **How do filters work?**

Most contain some form of filter medium, including:

Activated carbon: This absorbs very small amounts of organic material, removes tastes and odours, and removes chlorine. However, often the units contain very small amounts of carbon and their capacity to absorb material is very limited.

Ion exchange resins: These are synthetic resins which swap positively charged substances (e.g. metals) in the water for hydrogen ions (acidity). Some resins will swap negatively charged substances (e.g. from mineral salts) for hydroxide ions (alkalinity).

Membrane: Some filters contain a membrane with very fine pores which prevent any minute particles passing through.

Other treatment can include:

Softeners: Most softeners work by passing water through special resins which swap calcium or magnesium minerals for those based on sodium.

Control of bacteria : Some units include disinfection devices based on ultra violet light.

### **What problems can occur with point of use devices?**

In some circumstances, filters can harm water quality. This should not happen with filters from reputable manufacturers, if installed, used and maintained properly. However, the following problems can arise, particularly with some plumbed - in units:

Growth of bacteria: Unsuitable plastic materials and activated charcoal can contribute to bacterial growth, particularly if kept continually moist and warm. Sometimes the bacteria can move up the pipes to grow in the drinking water taps. Some filters are impregnated with silver to prevent this, but this does not always work very effectively, and the silver in the filter can leach into the drinking water.

Tastes and odours: Sometimes, and particularly if bacterial growth occurs, filter units can give rise to unacceptable tastes and odours

Release of chemicals from the filter medium: Both ion exchange resins and activated charcoal have a limited capacity to absorb trace substances. If that limit is passed, absorbed substances can be released in a more concentrated form into the filtered drinking water. Therefore, replace the filter cartridge regularly according to the manufacturers instructions.

Corrosion of pipework: Some filter processes can make water more corrosive to pipework (e.g. lead or copper). This is not a problem if water is used immediately after filtering, but it can cause difficulty if the filter is plumbed in near the stop tap.

Break-up of filter material: If mishandled, badly made or badly fitted, some filters can release filter material into the water.

Water softeners : Most water softeners increase the amount of sodium in the drinking water. This can pose a risk to young babies or those that have to take a low sodium diet. For this reason many countries require that if water used domestically is softened, a separate unsoftened supply must be provided for drinking and cooking.

### **Are there any approval systems for point of use devices?**

There are likely to be specific Regulations controlling the sale and use of point of used devices in Member States. There may also be Regulations requiring the fitting of specific devices to prevent backflow of water from the private property into the mains network. Please contact the appropriate authorities in each Member State for advice.