

## Why protect against "scale" and "corrosion"?

- "Scale" build up in pipes is not simply a nuisance, it has an economic cost.
- Most **water borne diseases** do not originate in water but on surfaces which water makes contact with. Scale in pipes provides additional areas for bio film and organic material to gather and possible sites for water borne pathogens to breed.
- "Scale" reduces the **thermal efficiency** of heating systems. "Scale" is an insulator. With every 1 mm of "Scale" build up in a typical boiler system there is a 3 - 7% decrease in efficiency. Less efficient heating requires more energy and more energy means more heating costs.
- Fossil fuel **costs increase** each year. Fossil fuels pollute; two good reasons to take action.
- In most countries water, used by both private households and industry, has to be paid for by the user. As demand for this finite resource increases the cost to use water will also increase.
- Corrosion in water pipes requires maintenance and may ultimately lead to replacing sections of pipes as well as equipment installed on these pipes. In a home this can cause substantial imposition and costs. In industry this can have significant costs both direct and indirect. It makes sound economic sense to ensure pipes and equipment attached to water pipes is maintained in good condition.

### Some methods available include:

**Ion exchangers:** often used as a method to stop / control "scaling" in water circuits. To remove calcium (the main component of "Scale") from water, ion exchangers exchange calcium ions, present in the "Hard" water, for sodium ions. It is for this reason that salt (NaCl) has to be regularly added to the ion exchanger units. Depending upon the number of persons in residence, showers or baths etc, a home may require in excess of 20kg of salt to be added to an ion exchanger each month. Due to system inefficiency not all salt is used in this "exchange" process. Ion exchangers "re-generate" (flush) themselves to clean so that they can continue to remove calcium from the incoming water. This process flushes calcium and salt into the waste water systems. There is a cost to process this waste. Gradually municipalities charge the user for this service directly or indirectly (the polluter pays). From a health perspective it might make sense to check if such a device is suitable if you require a low sodium diet.

**Reverse Osmosis (RO)** is another common technique, employed in households as well as by industrial users. Basically water is squeezed through a very fine filtration system and almost all particles held in suspension are removed. This process is very useful for certain industrial processes but is an inefficient use of water (up to 60% more water is required than is available for use after the RO process, the equivalent to paying for 1.6 litres of water to get 1 litre to use!). RO water in its pure form is not recommended for human consumption (potable). It can also prove corrosive. It is normal practice to add "untreated" water back into the "pure" RO produced water if it is to be used for drinking.

A question; if the only purpose behind treating water is to control "Scale build up" why use a costly treatment system such as Reverse Osmosis or an ion exchanger system?

Finally there are costs (Installation, capital, as well as ongoing power and consumables).

With ion exchangers and Reverse Osmosis systems, potential users should consider the **total costs** of employing such techniques and not simply the purchase price of the equipment. Other costs to consider include:

(1) Installation costs (Plumber / Electrician / technician).	000.00€
(2) System "Down time" during installation and maintenance	000.00€
(3) Costs of disposing "by products" (RO and Ion exchanger systems)	000.00€
(4) Consumable costs (5 grams of salt for every litre of water treated) Ion exchange.	000.00€
(5) Maintenance costs of RO and ion exchange systems (service costs) over 5 years.	000.00€
Total additional costs (assume over 5 years) excluding purchase price of equipment	0000.00€

### *Now compare with the Sialex™ Ring solution*

- One Price
- No Installation costs
- No By-products
- No Consumable costs
- No Maintenance costs

**The savings speak for themselves.....**