

## 💧 is there oestrogen in our water?

Fears for the effect on human health have fuelled new research into sources of the female hormone oestrogen in British rivers by the Essex and Norfolk Water Authority. Studies have shown that oestrogenic chemicals are changing the sex of fish in British rivers and have been found in water which contains sewage effluent treated by water companies. Scientists are concerned that these chemicals pose a threat to human health and these fears are fuelling a previously unpublicised research programme.

There has been speculation that the effect is linked to the fall in the sperm count in men, which is dropping by as much as 2% each year. Current research has not given any clues on the potential scale of the problem in humans, nor has it isolated all the sources of oestrogenic chemicals in water.

Professor John Sumpter of Brunel University, London is generally accepted by academics and the water companies as an expert in this field. As early as 1993, Sumpter observed that there was an increased prevalence of hermaphroditism (characteristics of both sexes) of fish in sewage treatment water.

Further research identified the chemical nonylphenol in water containing treated sewage effluent. Nonylphenol was found to have an oestrogenic effect of "feminising" male fish. The male genitals wither and die and the fish develop female organs. Oestrogen is the same chemical in fish as in humans and has the same effect on tissues and organs in all animals.

Treated sewage effluent forms a large part of the flow in many British rivers and is the responsibility of water companies. The latest research suggests that nonylphenol is not the only oestrogenic chemical in water. Sumpter is clear that nonylphenol is present in our drinking water, but the research has not proved that there are sufficient concentrations of the chemicals to be a significant source for humans. "Most chemicals are present in drinking water, including nonylphenol. They may enter from waste water down your sink, they may come from landfill sites or from industry. It is impossible to prevent any chemical from getting in. The amount of water that we drink suggests that it is not a major route." However there is still a potential risk of oestrogen from the environment and the food chain.

Water is not the only source of oestrogenic chemicals. Plastic food wrappings have been found to degrade to oestrogenic chemicals and there has been a recent controversy over their existence in commercial baby milk powders. Concerning issues of oestrogen in the environment and their effects, Sumpter says: "We need to address it now. It will be too late in twenty years to find we have a serious health problem and we haven't done any science." Sumpter feels that scientists have only encountered the tip of the iceberg on the issue.

Dr. John Devall is chief technician at the Norfolk and Essex laboratory where the research to identify the sources is centred. He pins his hopes on an new method of screening for oestrogen developed in conjunction with Professor Sumpter. "The screen, using genetically engineered yeast, shows up the chemicals other than nonylphenol that are oestrogenic." The yeast has been genetically engineered to include the human DNA oestrogen receptor. The receptor reacted to river water suggesting that there were other sources of oestrogen and that oestrogens of different types are more widespread than originally thought. Essex and Norfolk Water Authority are conducting a serious and thorough investigation and are hopeful of positive results. Nonetheless, the official line of the water industry is to underplay the human health risk and the culpability of water companies. Bob Price is the spokesman of the Water Trade Association and Head of Water Quality at Anglia Water. He stated earlier this month that "there is no oestrogen in drinking

water." Despite the positive picture Price paints of the issue for the water industry, he concedes that "maybe the water industry will find that they need to make controls more effective."

Price is keen to stress that research by Essex and Norfolk Water has not yet been reported. Nonetheless, he is prepared to pre-empt the findings by saying "Water Authorities are likely to make attempts to reduce the sources of oestrogen when they are identified, but research is unlikely to find them because sewage treatment is very efficient on organic substances." Despite this stated efficiency, oestrogen has been found in treated water and this does not address the question of oestrogen in rivers or the risk from these chemicals entering the food chain.

#### **comment**

One of the best ways to protect ourselves from pollutants in the water we drink and cook with is to distill it with a simple home distiller. This is less expensive and more efficient than filtering, but a good water filter will also help. In women progesterone is the balancing hormone that 'opposes oestrogen'. For both men and women, including soya, high in phyto-oestrogens, in the diet is protective; these weaker phyto-oestrogens occupy oestrogen receptor sites and help block the toxic chemical oestrogens. Further reading 'Men, Stress and Hormones' Offprint No.8.

#### **An investigation by Daniel Wright for Beyond Nutrition (issue April 1996) - a Higher Nature Publication**

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