

Unlocking the riddle of LCD re-use

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Scientists at the University of York are to play a pivotal role in new research aimed at averting a growing environmental problem caused by discarded liquid crystal displays (LCDs).

LCDs are a fixture of modern life, appearing in everything from pocket calculators and mobile telephones to wide-screen televisions.

But the liquid crystals they contain are potentially hazardous and technological advances are so rapid that society is already discarding millions of LCD screens each year. There are no viable recovery techniques and no fully safe disposal options.

Some 40 million LCD television sets were sold worldwide last year with expected sales likely to top 100 million by 2009.

Now scientists in the Department of Chemistry at the University of York have won a major DTI competition to investigate ways of extracting and recycling liquid crystals from waste LCD devices. They are part of a consortium of nine partners and supported by the Resource Efficiency Knowledge Transfer Network (KTN) and the Displays and Lighting Knowledge Transfer Network. The DTI will fund 50% of a total bid worth £1.7 million.

Welcoming the research, Science and Innovation Minister, Lord Sainsbury said:

"This research initiative provides a real opportunity to harness the world

class expertise that we possess in the UK and direct it towards the task of wealth creation.

"By providing a focus for collaboration and delivery, this partnership will help establish British industry as the world leader in this area."

LCD screens are usually composed of two glass sheets, between which, a thin film of viscous liquid crystal material is deposited. The material is a mixture of anywhere between 15 to 20 different compounds. EU legislation now prevents disposal of electronic materials in landfill.

Dr Avtar Matharu, of the Department of Chemistry at York, said: "The amount LCD waste is increasing at an alarming rate and, with disposal in landfill or incineration no longer acceptable, new solutions were needed. We have developed a technology that offers a clean, efficient way to recover the mixture of liquid crystals from waste LCD devices. Once recovered, the liquid crystal mixture will be recycled in to different LCDs or the mixture will be separated into individual components for re-sale."

Source: University of York

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