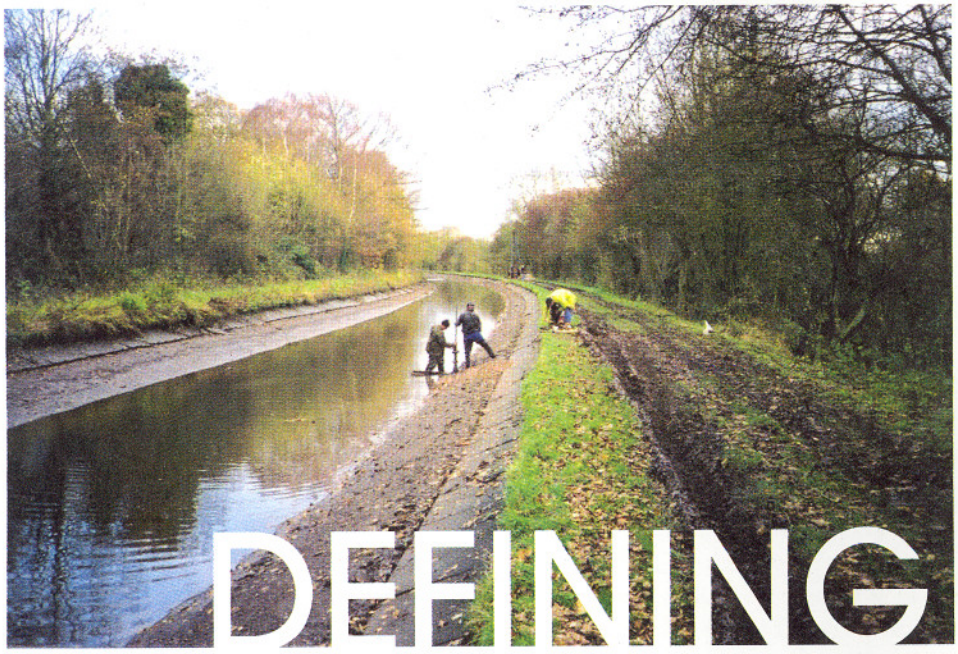


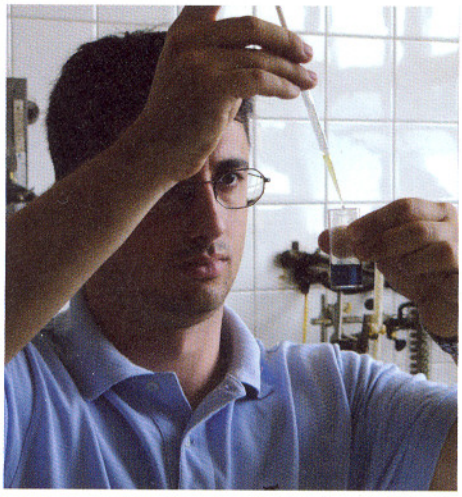
DEFINING TIMES

When 'special waste' became classified as 'hazardous waste' by the Hazardous Waste (England and Wales) Regulations 2005 and the Special Waste Amendment (Scotland) Regulations 2004, it was not anticipated that there would be significant changes. The reality was quite different, as Paul Beckwith and Phil Studds explain.*

The recent changes in hazardous waste regulations have resulted in fairly innocuous soil-based material (previously defined as inert or controlled waste) becoming classified as 'hazardous.' This re-classification had dramatic cost implications for waste producers, increasing the cost of disposal of the re-classified soil by four or five times. It also meant that a scarce resource (space in a hazardous waste landfill) was being used inappropriately by materials that do not require such specialist disposal.

Current waste regulations require waste producers to assume that the elemental composition of waste soil comprises the worst-case speciation of the elements contained within the soil. For example, for wastes containing chromium, the current approach is to assume that all chromium present in the soil is in the form of toxic chromium trioxide rather than the significantly less toxic chromium oxide. This approach can result in inappropriate classification of the soil. Indeed, the regulatory non-statutory guidance WM2 states that: 'In such cases the waste holder would need to determine what substances are likely to be present based on the process/activity that produced the waste and the anions and cations present. If the holder cannot decide which substances might be present, they should assume the worst-case scenario for each component and assess the waste accordingly.'

White Young Green Environmental has questioned the use of the worse-case chemical form for classification purposes because this approach conflicts with



another current Environment Agency guidance requirement which states that: 'the worse-case chemical form must be able to exist in the environment that the waste being sampled was taken from,' (*Framework for the Classification of Contaminated Soils as Hazardous Waste*, EA, July 2004). British Waterways commissioned White Young Green Environmental to review the issue for all its sediments at a strategic level and give support on a site-specific basis.

Sediment classification required by the regulations focuses typically on key metal elements contained within the sediment. White Young Green Environmental's review concluded that the worse-case speciation of the metal compounds are unlikely to exist within the sediments concerned because these compounds are usually soluble and hence would have most likely dissolved in the aqueous environment in which they are found. A literature review was completed to attempt to establish the likely speciation of the key metal elements found within the sediment. Using this data the potential and most likely speciated

forms of the elements under aerobic conditions (oxygen rich) were identified.

The implications of this 'realistic' classification were established by reviewing the results of the chemical analyses of over 1,000 sediment samples; representative concentrations developed for a model sediment based on the upper 95 percent mean concentrations for each of the metal elements; and leach test data from over 100 sediment samples with metal concentrations at the higher end of the ranges also reviewed. The results of the leach tests demonstrated that the metals associated with the sediment were typically not in the mobile leachable form. These data supported the theory that the compounds in the sediment were not in the worse-case speciated form because all these compounds, bar one, are very soluble and hence should leach freely during leach tests.

A hazardous property assessment was carried out to determine whether the model sediment created triggered any of the hazardous properties. None of the hazardous properties were triggered during the assessment suggesting that the model sediment could be classified as non-hazardous waste.

It is encouraging that many waste regulators are now engaging constructively with industry to use high quality information and assessment of waste materials to enable more appropriate ways of dealing with some wastes. A recent case, looking at dredged material in Glasgow, where British Waterways Scotland and the Scottish Environmental Protection Agency worked together to interpret the current waste guidance, resulted in additional laboratory costs of approximately £20,000 to establish speciation, but this in turn led to disposal cost savings of approximately £500,000. Where regulators and operators work together constructively it is possible to find sensible and sustainable solutions with regard to classification of a waste stream conserving the valuable resource of void space in hazardous waste landfills without increasing environmental risk, as well as saving unwarranted costs. ■

*Paul Beckwith is from British Waterways and is a member of CIWEM's Waste Management Panel. Phil Studds is from White Young Green Environmental.