

Developments in Management of Contaminated Land in the UK and Observations on Europe

Professor Paul Nathanail, University of Nottingham & Land Quality Management Ltd UK
(paul@lqm.co.uk)

The United Kingdom has been implementing a risk based approach to the redevelopment of contaminated land for over three decades. Since the early 1990s this has been explicitly endorsed, nay required, by national policy and legislation. Contaminated land has been recognised as an externality: an unwanted, though not always unintended, legacy from previous generations. Most remediation of historically contaminated land is carried out through the redevelopment process as part of either obtaining or fulfilling conditions on planning permission for new development. Recent announcements suggest a policy shift to ensuring that the way that risk based management of contaminated land is being carried out is compatible with the principles of sustainable development.

Since 2006, government policy has consolidated and reinforced the principle of ensuring new development is rendered fit for purpose by the developer while existing land uses found to be posing an unacceptable level of risk become the subject of regulatory enforced remediation. At the time of writing (early December 2010) we are awaiting publication of a consultation draft for a revision of the secondary legislation underpinning the contaminated land regime in England. This will clarify the basis for determining statutory contaminated land and the basis for not doing so; it will require a summary of the decision and its basis to be made available for the non specialist and will explicitly point out that contaminant levels that are typical of an area or region cannot fall within the definition of statutory contaminated land.

At an European level, attempts to regulate contaminated soil through an EU Directive remain stalled by a blocking minority of member states who oppose the proposals in principle or in detail. The detailed objections include rejecting the requirement for a register of potentially contaminated sites as it would cause blight; of requiring regular re-analysis of soil (e.g. on sale or transfer of ownership rather than at change of land use and; focusing on total concentrations or levels of contamination rather than the risk they pose.

Meanwhile other Directives have resulted in contamination gaining a higher profile in those member states without specific domestic contaminated land or soil protection techniques. The Environmental Liability Directive catches new contamination. The Seveso Directive spawned domestic legislation dealing with industrial sites able to cause major accidents. The Integrated Pollution Prevention and Control Directive (soon to be revised and emerge as the Industrial Emissions Directive) requires any release of contaminants by a permitted process to be recovered to return a site to a 'satisfactory state'. The recent devastating failure of a Hungarian tailings dam, considered to lie outside Directive 2006/21/EC on the Management of Waste from the Extractive Industries, may emerge as an example of the benefit of pan European legislation.

Setting Soil Guideline Values, deriving Generic Assessment Criteria and incorporating Bioaccessibility - Advances in the UK

Professor Paul Nathanail, University of Nottingham & Land Quality Management Ltd UK

Soil Guideline Values (SGV) are generic assessment criteria (GAC) that comprise total concentrations of contaminants in soil that pose negligible or minimal risk to human health for a specific land use scenario. SGVs for about ten substances have been developed by the Environment Agency (EA) initially in 2002 & 2004 and more recently in 2009. Some 60 substances were identified by the Cabinet Office convened SGV Task Force in 2005-6 as being high priority and needing SGVs.

Since then, we have witnessed a rapid and widely welcome move away from the slow process of developing generic assessment criteria towards sector led initiatives which in the space of a few months can deliver published, scientifically robust generic assessment criteria at no cost to central government. This move was initiated by a collaboration between Land Quality Management Ltd and the Chartered Institute of Environmental Health and made use of the University of Nottingham's 100-PC seat Ebdon laboratory. LQM and the CIEH brought together a group of regulators and practitioners to process information on many contaminants of priority concern. This work was reviewed, checked and documented by the LQM team and blushed in late 2006 for those substances for which there was no UK Soil Guideline Value (SGV). Following changes to the UK Contaminated Land Exposure Assessment model (CLEA) and the release of SGVs for fewer than 10 substances in early 2009 the exercise was repeated and the number of substances more than doubled to 82. Shortly afterwards another industry led initiative resulted in the publication of generic assessment criteria for a further 40 or so substances.

In 2000, the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) published a paper worksheet methodology developed by the late Colin Ferguson and his team for the derivation of site specific assessment criteria as stopgap before the publication of the CLEA model and accompanying SGVs. These were eventually published in 2002 (and withdrawn in 2009). In 2003, SNIFFER published an updated methodology comprising a spreadsheet and revised paper worksheet that allowed a site specific estimate of contaminant bioavailability (usually obtained from in vitro bioaccessibility tests) to be reflected in site specific assessment criteria. This allowed naturally occurring arsenic to be shown not to be posing elevated levels of risk and much unnecessary remediation mainly under the planning regime but also under the contaminated land regime was avoided. Savings on one site alone were estimated at up to £30M.

In 2009, and after many years of EA consideration of the concept, the revised CLEA model (versions 1.04, 1.05 and 1.06 all released in 2009) allowed for site specific estimates of bioavailability for the first time. Earlier in 2010 two initiatives resulted in tests for estimating the oral bioaccessibility of benzo(a)pyrene. Initial results suggest that the measured bioaccessibility is relatively high and other exposure pathways pose similar levels of risk to the direct ingestion pathway. This means that the increases in site specific assessment criteria demonstrated for arsenic and to a lesser extent nickel and lead have not yet been replicated for benzo(a)pyrene, a common trigger for remediation in urban soils.