# As Clear As Mud

## The development of characterisation and classification of dredgings within increasing waste regulations

by Paul Beckwith and Nick Smith, British Waterways

When waste is produced by an industrial factory, it is relatively easy to characterise. However for a large number of companies the materials they handle, process and discard do not result from a production line and cannot easily be defined. These waste producers are faced with a need to characterise and classify materials that may appear homogeneous but may actually be chemically heterogeneous. This is a challenge for organisations disposing of soil-like materials and includes those dealing with contaminated land, as well as those managing dredged materials, such as British Waterways.

British Waterways is a publicly owned body managing the majority of inland navigations in the United Kingdom, but the changes in environmental legislation have meant that it has also become a waste management company. The waste it manages arises from dredging operations which are essential for the maintenance of navigation. British Waterways has thirty nine licensed waste management sites, makes numerous notifications of deposits exempt from waste management and licensing regulations and manages contracts to transfer dredgings to commercial waste management sites.

The introduction of the Collection and Disposal of Waste Regulations in 1988, classifying dredgings as 'waste to be treated as industrial waste', meant that dredgings became 'controlled waste' as defined in the Control of Pollution Act, 1974. This meant that dredging disposal sites required licensing and that any dredgings deposited should not cause harm to the environment. This resulted in the start of chemical analysis and characterisation of dredgings. With the introduction of the 'Duty of Care' under the Environmental Protection Act 1990, it became apparent that chemical analysis would be a statutory prerequisite for disposal of all 'industrial waste', including dredgings.

To aid management of the dredging process, British Waterways sampled sediments at two kilometre intervals throughout the 3000 km waterway system that they manage. These samples were analysed for a suite of parameters derived from collating the various requirements of a number of waste regulatory authorities on earlier dredging disposal projects. The sampling and analysis resulted in a wealth of data, but a simple classification system that would allow staff to identify the disposal route was required.

The main criteria would be whether the material could be deposited onto agricultural land, or on the canal bank and towpath, or whether it should go to a disposal site and, if the latter, should it be one owned by British Waterways or a commercial site. If it was to be disposed of to agricultural land the most applicable guidance was the DoE 'Agricultural Use of Sewage Sludge'. For disposal to public open space the appropriate guidance was that produced by the DoE Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) on the 'Assessment and Redevelopment of Contaminated Land'. For disposal to waste disposal sites, additional guidance derived from Kelly, as implemented by the London Waste Regulatory Authority would be applied. Reference was also made to the Environment Programme of the Netherlands Ministry of Housing, Physical Planning and Environment, in order that parameters not covered by the existing government guidance could be evaluated.

Using these guidance documents, a classification system was developed categorising dredgings into six classes. Further development has resulted in a clearer three class system relating contamination to three disposal routes typified as:

- agricultural disposal;
- exempt deposit; and
- transfer to a waste management site.

This system has served British Waterways and the environment well since its beginnings in 1992 in allowing practicable management of a waste with limited environmental hazard.

For significantly contaminated dredgings the producer now has a responsibility to decide whether the dredgings are Special Waste. For materials that have a Hazard Data Sheet or have one specific characteristic this is a relatively simple task. For variable contamination held in a heterogeneous matrix such as soil or dredged material it is much more difficult. British Waterways are faced with the problem of how to assess a material with a known total concentration of a contaminant when the guidance relates to specific compounds which may not be able to be identified reliably, even with protracted analysis.

The resulting approach adopted is to look at the most likely compound that could exist in wet soil-like materials and apply a common sense approach. In general, if the concentration is below 1000 mg/kg there is unlikely to be a problem; where the concentration is between 1000 and 10,000 mg/kg there is a need to look at the Approved Supply List and confirm the limit for the most likely compound. The Environment Agency is aware of these issues and has been working to develop a Technical Assessment Group guidance which will be entitled *Contaminated Soils: Special Waste Regulations - Technical Assessment.*

To provide further characterisation of dredgings, British Waterways sampled the most contaminated canal sediments and subjected them to leaching tests. The results were assessed against the 'NRA Guidance on the Acceptable Values for Contaminated Material to be Deposited in Upper Tame Catchment'. This document was produced to provide guidance for those contractors, operators, developers and waste regulators involved in the deposit of materials in the Tame Valley.

Approximately half of all the samples with significantly elevated total concentrations, (above ICRCL threshold trigger concentrations) produced acceptable leachable concentrations when tested using both the CEN/TC292/WG2 Doc25 Rev 10 test, and the NRA test method presented in an Interim NRA Guidance of March 1994. This could illustrate that the hazard presented by most contaminated dredgings is limited, or it may illustrate the difficulty in applying generic interpretative tests. The Environment Agency has recently produced a Summary Note: 'Leaching test Method for the Assessment of Contaminated Land', which details the protocol for leaching testing resulting from validation testing of the NRA method.

From the relatively advanced position of already having an indication of the degree of 'leachability' of the most contaminated sediments, British Waterways were able to view the introduction of the 'Interim Guidance on the Disposal of Contaminated Soils' produced by the Environment Agency, with some objectivity. The guidance suggested that leaching samples of materials and assessing the leached contaminants would be required for materials already identified as suitable for open space use by the ICRCL guidance. It also applied a rigid interpretation of the ICRCL threshold concentration as a limit which is in contradiction with the ICRCL guidance, particularly with regard to phytotoxic elements. The document appeared to be an attempt to provide simple direct guidance on assessment of mixed materials, however it resulted in a strict overly-cautious approach. Where previously one set of test results would do, there was now a requirement for two. This internal guidance document was brought to our attention as a result of waste management licence negotiations. The Environment Agency is not rigidly applying this guidance as it is still in development, but it is of concern that draft guidance is used in discussions which have long term implications, such as applications for waste management licences.

Looking to the future, the situation is no clearer and is potentially more confusing. For those dealing with waste materials deposited under exemption from waste management licensing the impact of the new Groundwater Regulations is not yet clear. The EC landfill directive will have a direct impact on waste management practice and the move towards 'risk assessment' and the new contaminated land regime may result in an increasing analysis and interpretation requirement for any material to be deposited under exemption. This would particularly affect those depositing generic soils and soil-like materials. The balance of disposal could swing back to landfilling as the straightforward 'safe - no comeback' route. To avoid landfill sites being filled up with materials that could safely and usefully be deposited under exemptions under the Waste Management Licensing Regulations, it will be critical for the regulators to appreciate that they can also be facilitators. A partnership between the landowners, land managers, operators and the regulators needs to be developed. Changes in policy, or even it's interpretation must be openly discussed with affected parties. It will be critical for all parties to clearly communicate to prevent the occurrence of 'surprise' changes in interpretation of legislation and to clarify this very difficult area..

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