GUIDANCE FOR CONSTRUCTION ON CONTAMINATED SITES

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1. ABSTRACT
Extensive efforts have been made in recent years in the U.K. to recycle contaminated land for further beneficial use. The remedial treatment of this land often involves the application of engineering, science and technology set within planning, legal, contractual and social frameworks. However, rapid expansion of the knowledge base and the variety of remediation techniques now available can inhibit their adoption into practice. Collaborative information projects which explain these issues are effective and economical in speeding the transfer of R&D advances into practice. A major programme of research and guidance information on derelict and contaminated land is described and key areas of decommissioning and demolition, planning, site investigation and risk assessment, selection of, and options for, treatment are discussed.

2. INTRODUCTION
Over the next five years the Construction Industry Research and Information Association (CIRIA) plans to provide, within an integrated framework, the information needed by industry and its clients to work safely and effectively in developing contaminated land and regenerating urban environments.

Supported by industry and government, CIRIA has major programmes in the area of geoenvironmental engineering with work on the problems and hazards to construction from methane and the remedial treatment of contaminated sites.

Remedial treatment of contaminated land always requires specialist input. However construction professionals are often responsible for the design and implementation of developments and it is they who have to assess the best engineering options for remediation. In order to do so, they have to assimilate, sort, and evaluate the expanding amount of research and performance information. A proven and economical method of transferring technological information is by subject-area reviews and by the publication of statements of currently accepted good practice. How this is being achieved in the U.K. by collaborative research-and-information projects for the construction industry is described and conclusions drawn on the effectiveness of this approach to multi-disciplinary environmental engineering problems.

3. BACKGROUND
Despite considerable activity and significant government support through various grant schemes, in the last ten years nearly as much land has fallen into dereliction as has been reclaimed. Most of it so damaged by industrial or other exploitation as to be incapable of beneficial use without treatment. Over 50% of all land available for development in the UK is secondhand and about 50% of all development is now taking place on these "brownfield" sites of which some 50,000 to 100,000 individual sites are estimated to be affected by contamination. These sites are often an eyesore and may present more serious public health and environmental hazards.


Specific to contaminated land are the major policy commitments set out in the U.K. Government's response (3) to the Environment Committee Report to the House of Commons (1). One commitment is to support demonstration projects of novel clean-up technologies.

The European Community Green Paper, EUR12902N, encourages research into contaminated soil clean-up and recommends a programme of pilot projects. European Community Directives, even in initial discussion stages, already influence the shape of environmental protection policy.

A major constraint to the development of any contaminated site is resolving the question: "how best can the site be treated?".

Many filled and contaminated sites can be safely and economically brought back into use by appropriate treatment and design through all stages of their redevelopment: planning; site investigation; remedial ground treatment; design; construction; and post-construction monitoring and maintenance. However, development agencies (both public and private) and their professional advisors are faced with an increasing number of technical options for treating contaminated land within a changing legislative and economic environment. Much of the information available is fragmented and a wide body of opinion felt that an independent and authoritative handbook was essential, providing guidance and information on good practice to help make the best choice.

4. CONSTRUCTION INDUSTRY RESEARCH AND INFORMATION ASSOCIATION, CIRIA

For some 30 years, CIRIA has carried out research on topics chosen by construction professionals within the membership of the Association. Thus the research is relevant, timely, and seen as needed. For each project, a balanced steering group of expert and interested professionals guides the research contractor and CIRIA project manager on the scope, technical sufficiency and objectivity of the project report. By careful selection of the contractor and with the wide-ranging input of the steering group, the work is recognised by all sides of industry as independent and authoritative. An important aspect of this comes from the way the project is funded by contributions both from government and different industry interests as direct sponsorship and in-kind contributions. The Department of the Environment, as the sponsor Ministry for construction research, has long given major support to CIRIA projects and especially now to the geoenvironmental programmes on derelict land, contaminated sites and their hazards.

Information about environmental research and R&D projects, is usually made available through journals, in the technical press, and by conferences and seminars, etc.. In the U.K., accessible information (i.e. in the public domain) usually stems from work commissioned by government or its agencies or with a proportion of government funding. The rapid expansion of the knowledge base (in all technical areas) paradoxically creates uncertainty: more problems are brought to light; more solutions are offered; yet few people are in a position to comprehend and understand all the issues. The critical gap between developments and their application in practice is more than the dissemination of R&D results: statements of good practice and state-of-the-art reviews are needed. It is this gap which CIRIA has successfully, and uniquely, filled for a wide variety of construction related topics.