



# CONTAMINATED LAND INVESTIGATION



DATA SHEET

**HARRISON GROUP ENVIRONMENTAL LTD** offers a comprehensive range of in-house services to carry out successful site investigation and assessment of contaminated land.

The majority of projects have been on brownfield sites, industrial and commercial facilities comprising landfill sites, chemical works and manufacturing plants.

- **Risk Assessment** - quantify the potential risks to human health, the environment, air and water resources. The analysis is used to evaluate the need for, and extent of, land remediation
- **Remediation Strategy Assessment** - assess the potential remediation strategies that may be applied with respect to efficacy, technical practicability and cost effectiveness

## SITE INVESTIGATION

The assessment and regeneration of contaminated land is critical to the land use planning and environmental protection objectives.



A structured approach is applied to evaluating contaminated land. Specifically, the following elements are incorporated:-

- **Phase I Assessments** - involving desk based and literature surveys to assess the history and baseline environmental setting of potentially contaminated sites. The information is applied to rank the environmental priorities and develop the site investigation strategy
- **Intrusive Site Investigations** - involving the collection of environmental samples – soil, groundwater, surface water, air and biota - to quantify the levels of contaminants in environmental media and assess the extent of contamination

The assessment and remediation of contaminated land involves working closely with the Environment Agency, Local Authorities and other relevant bodies. **Harrison Environmental Consulting** has comprehensive experience in contaminated land assessment and remediation at sites both in the UK and overseas. The resources are available to investigate, test, report and where appropriate, design site remediation measures.

## HEALTH RISK ASSESSMENT

Quantitative human health risk assessment is a method that uses data on the inherent toxicity of chemicals, exposure patterns and population characteristics to estimate the potential harmful effects of chemicals on human beings. It is a vital element in a variety of activities including industrial pollution prevention, contaminated land clean-up, and chemical regulation.

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There are generally four steps in a quantitative human health risk assessment process:-

- 1. Hazard identification:** evaluate available evidence regarding the potential for particular contaminants to cause adverse effects in exposed human populations
- 2. Exposure assessment:** identify the type, magnitude and duration of exposure of humans to contaminated media
- 3. Dose-response assessment:** estimate the relationship between the extent of exposure to a chemical and the increase of the likelihood and severity of adverse health effects
- 4. Risk characterisation:** integrate the information from the 3 steps above and characterise the potential for adverse health effects to occur in the exposed population

Risk assessments have been completed under a variety of technical methodologies and regulatory schemes including:-

- Risk Based Corrective Action (RBCA)
- Contaminated Land Exposure Assessment (CLEA) – UK
- Risk Assessment Guidance for Superfund (RAGS) – USA

**GROUNDWATER CONTAMINATION ASSESSMENT AND REMEDIATION**

Harrison Environmental Consulting has provided groundwater assessment, groundwater modelling & risk assessment and site remediation services as part of many contaminated land projects in the UK and Europe.

Staff have also carried out successful hydrogeological investigations, using a variety of different drilling equipment and techniques and groundwater modelling using a variety of methods and software packages have been undertaken. These include: -

- Risk Based Corrective Action (RBCA)
- R&D P20 (UK Environment Agency)
- MODFLOW
- BIOPLUME



**SITE REMEDIATION STRATEGIES**

Numerous remediation systems through their design, installation, monitoring, regulatory sign-off and decommissioning have been completed.

Staff have gained extensive field experience with use of geoprobe, window sampling equipment, membrane interface probe and others. In addition to this, they are also able to carry out chemical monitoring, testing and analysis through the use of gas chromatography, infra-red absorption spectroscopy, mass spectroscopy, and NMR spectroscopy techniques & equipment.

Harrison Environmental Consulting has extensive experience in applying health risk assessment for a variety of agents and land use scenarios. Assessed agents include chemical, mineral, radiological and microbiological, under residential, industrial and agricultural settings. The assessments have been used to support land use planning and site clean up, waste management strategies, emergency response, industrial exposure assessments and corporate environmental policies.

