

## **Workpackage H - Restoration of acid tar lagoons**

### **Objectives**

The goal of the research is to discover if a fresh look, by independent people, can find a way to resolve the remediation problems at acid tar lagoons in general and at a particular acid tar lagoon bounded by housing and a stream in particular. The project will cover both socio-economic and technical issues, with the objectives of:

- advancing technical and scientific knowledge
- developing technically sound remediation strategies
- testing best practice in working with all stakeholders
- test the hypothesis “ How can urban acid tar lagoons be remediated sustainably?”

### **Conceptual Model**

Acid tar lagoons are a major source of contamination that is a hazard to human health, controlled waters and the natural environment. The principal study site, round which the socio-economic study will take place, is in dual ownership. One site owner's part of the site is fenced and is not open to the public whilst the other is being used as public open space. The whole site is bounded by residential housing and a stream. As such this site contains many of the most problematic elements of such sites within the UK: development blight, severe contamination, low value, access restrictions, multiple risk receptors nearby, etc. The site contains 10,650 m<sup>3</sup> of mobile low density acid tars, while a further 60,000 m<sup>3</sup> of made ground are contaminated by benzene, toluene and PAHs. The site can be designated as a “Special Site” under Part IIA of the Environmental Protection Act (1990) because of the type of waste within the site and the possible pollution of controlled waters. The Environment Agency is currently assessing an ‘in house’ Human Health Risk Assessment, with results due in January 2004.

### **Method**

#### Social science agenda

- a) establish best practice (literature review)
- b) monitor decision making processes, behaviour and performance (actions and reactions) of all stakeholders
- c) test performance against best practice
- d) formulation of a framework and/or recommendations for sustainable remediation strategies acceptable to all stakeholders
- e) generic outputs (distinguish site specific and generic issues)

## Social science work plan

Oct 03 - May06:	Advisory Group meetings as required
Jan/Feb 04:	Assessment of, and reaction to, EA's health risk assessment report (NL + ST + Adv.)
Nov 03-Jan 04	Health risk assessment- literature review (NL)
Dec03-May 04	Health risk assessment- monitor stakeholder performance (NL)
Feb 04-Aug 04	Health risk assessment- test against best practice (NL + ST)
Oct 03-Feb 04	Communication strategies- lit review (NL + Adv.)
Oct 03-July 05	Communication strategies- monitor stakeholder performance (NL)
June 05-Dec 05	Communication strategies- test against best practice (NL)
Oct 03-April 04	Stakeholder responsibility- lit review (NL +Adv.)
Oct 03-Aug 05	Stakeholder responsibility- monitor stakeholder performance (NL)
June 05 –Dec 05	Stakeholder responsibility- test against best practice (NL)
Oct 05-Dec 05	Stakeholder responsibility- framework (NL + ST + Adv.)
Oct 05-March 06	Integration social, health and remediation concerns (NL + ST + CS)

## Physical science/remediation strategies agenda

### *Characterisation and development of conceptual model*

- Environmental risk assessment of acid tar lagoons (literature review)
- Review of the relevance of BS 10175 and CLEA site characterisation methodology to acid tar lagoons and possible formation of a revised characterisation strategy specifically for acid tar lagoons
- sampling regime for acid tars. How to sample, where to sample and how many samples are required to establish concentrations and characterise risk at acid tar lagoons.
- Laboratory testing methodology and required levels of accuracy for testing acid tar in free and aqueous phases. - characterisation of mechanical and transport properties and chemical characteristics
- site specific characterisation and environmental risk assessment

### *Remediation*

- review of remediation technologies (literature review)
- specify and laboratory test site specific remediation strategies
- cost/benefit analysis assessment of best site specific remediation strategies
- Integrate study of remediation strategy with site specific human health and social concerns.

## Physical science Work Plan for Year 1:

Nov 03/March 04	Literature review - acid tar properties, risk assessment methodologies, remediation strategies
Jan 04	Technical brainstorm group
Jan 04	Develop conceptual model of lagoon/environment interactions, develop sampling strategies and lab test methodologies
Mar 04	Sample Lord St & Hoole Bank lagoons.
Nov 04	Technical brainstorm group, update literature review on remediation Develop and start testing strategies in lab. Start seeking funding for field trials