



ENVIRONMENTAL PROTECTION ACT 1990, SECTION 78b

NOTICE OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990, Slough Borough Council has determined that the land at:

**COLNBROOK C of E SCHOOL, HIGH STREET, COLNBROOK,
SLOUGH, BERKSHIRE, SI3 0JZ (as shown on the attached plan as land shaded
green)
National grid reference approximate site centre 502600, 177000**

Is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

Slough Borough Council has identified the presence of a contamination source, a pathway, and a receptor with respect to the current use of the land. The Council is satisfied that as a result of this pollution linkage a significant possibility of significant harm exists, with no suitable and sufficient risk management arrangements in place to prevent such harm.

A summary of the basis on which this determination has been made is set out in the Schedule to this notification.

Date of notice 29 January 2010.

A handwritten signature in black ink, appearing to read "Denise Alder".

Denise Alder
Strategic Director of Green and Built Environment
Slough Borough Council

Slough Borough Council, Environmental Services & Quality, St. Martins Place, 51 Bath Road, Slough, SL1 3UF



Figure 1 Catholic CofE School location

SCHEDULE

SIGNIFICANT POLLUTANT LINKAGES

SPL number	Contaminant	Risk-driving exposure pathway	Key Receptor
1	Free Cyanide	Acute exposure via pica behaviour (defined as the ingestion of soil in amounts far exceeding those observed by the average child)	Current site users (pupils)
2	Lead Cyanides (total & free) PAHs:(benzo(a)anthracene, chrysene, benzo(a)pyrene, dibenzo(ah)anthracene)	Ingestion inhalation and dermal contact with contaminated soil, windblown dust and contaminated groundwater.	Current site users and trespassers
3	Lead Cyanides (total & free) PAHs:(benzo(a)anthracene, chrysene, benzo(a)pyrene, dibenzo(ah)anthracene)	Inhalation of windblown dust.	Neighbouring site users
4	Lead	Uptake into available produce, grown in close proximity to the raised beds in the centre of the site.	Current site users and trespassers.
5	Chrysotile asbestos	Inhalation of asbestos fibres	Current site users and trespassers.
6	Chrysotile asbestos	Inhalation of asbestos fibres	Neighbouring site users

These source-pathway-receptor linkages are considered to represent a Significant Pollution Linkage, indicative of a significant possibility of significant harm to human health.

SUMMARY OF EVIDENCE UPON WHICH DETERMINATION HAS BEEN BASED

Atkins Ltd. *Assessment of Potential Part 2A Priority Site, Colnbrook Gasworks (1416)*. May 2009. Colnbrook 1416 rev2.

Terramech Ltd. *Phase 1 & 2 Environmental and Geotechnical Investigation No. 2913/09 at Colnbrook Primary School, The High Street, Colnbrook*. April 2009.

Atkins Ltd. *Colnbrook School – Surface Soil Sampling*. Ref. 5064580/Colnbrook/L02, Final Report, May 2009.

Parsons Brinkerhoff Ltd. *Environmental Assessment, Colnbrook Primary School, High Street, Colnbrook, Slough*. Ref: FSE97412A. January 2010.

DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY AT THE SITE

The site being determined: Former Gas Works, Colnbrook C of E School, High Street, Colnbrook, Slough is located within the north-western corner of the site currently occupied by Colnbrook C of E Primary School, at approximate grid reference of site centre: 502600, 177000.

Colnbrook C of E Primary School has occupied its current site, off the High Street, Colnbrook since approximately 1975. Slough Borough Council identified the site as a high priority for inspection under Part 2A of the Environmental Protection Act 1990 following a review of historic maps which showed Colnbrook Gasworks to have occupied the north-western corner of the current school site from 1865 to approximately 1964. No records of the demolition of the former gas works or any associated remediation of the site prior to the construction of the existing school are available. The potential for gas works related wastes to remain in the underlying soils presenting a significant risk of contamination was identified.

SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE

Slough Borough Council commissioned Atkins Ltd to carry out an initial desk study assessment of the site, which recommended further investigation of the site under Part 2A of the Environmental Protection Act 1990 (EPA 1990).

Co-incidental with the desk study assessment under Part 2A, Slough Borough Council's Local Education Authority commissioned Terramech Ltd to carry out an independent site investigation for the design of a proposed new building on the site. This included a number of trial pits excavated across the north-east corner of the school grounds. During this investigation the remains of the gas holders were encountered, and visual evidence of cyanide and coal tar reported. Soil samples taken at depths between 0.3m below ground level and 1.4m below ground level revealed elevated concentrations of cyanide and hydrocarbons such as are associated with gasworks wastes. It was therefore concluded that during the construction of the school, gasworks wastes were left in the ground at depth.

Following these works the area was fenced off and a temporary capping system was emplaced to prevent risks to site users and neighbours occurring.

Atkins Ltd were then instructed by Slough Borough Council to undertake an initial investigation of surface soil contamination at the site, to provide preliminary information on surface contamination potentially resulting from the former gasworks, and to assess the immediate implications for public health. Hand dug pits were excavated between ground level and 0.4m below ground level in areas where the likelihood of exposure to soils was considered high. Samples were not taken from the immediate area of the former gas works previously investigated by Terramech Ltd. A water sample was also taken from an indoor tap in the school to assess if contaminants were leaching into the water supply via underground plastic pipes.

Samples were submitted to an MCERTS accredited laboratory for analysis of a range of determinands associated with gasworks including metals and inorganics such as cyanide, petroleum hydrocarbons including total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs), which are indicative of coal tars. A generic assessment of the laboratory results against Atkins Soil Screening Values for residential land uses, was undertaken for this assessment of short-term risks.

Slightly elevated concentrations of PAHs and lead were found but were considered not likely to present a short-term risk to pupils at the school. Further assessment of the long-term human health exposure risks and risks to controlled water under Part 2A of the EPA 1990 was recommended. This report also recommended that consumption of produce grown in the school vegetable garden was ceased pending the recommended further investigations.

Parsons Brinkerhoff undertook a comprehensive investigation, on behalf of Slough Borough Council, of the ground surrounding Colnbrook C of E School. The main objectives of this investigation was to undertake an intrusive ground investigation to allow risks posed by the previous land use to be assessed, to identify significant pollutant linkages and to provide sufficient information to assist in assessing whether the site should be determined as 'contaminated land' as defined by Section 78A(2) of the EPA 1990.

Further sampling of soil on the site, collection and analysis of groundwater samples and surface water samples from the adjacent Colne Brook, were undertaken. All samples were submitted for analysis at an MCERTS accredited laboratory. A vapour sampling exercise was also undertaken as part of the Parsons Brinkerhoff investigation.

The assessment of the data was undertaken following a tiered approach, in accordance with current Government guidance. Generic assessment criteria for identification of potential human health risks derived by Parsons Brinkerhoff for a 'residential without plant uptake land use' were applied. Following this generic assessment the principal contaminants of concern were identified as: Metals and metalloids (Arsenic, chromium and lead); Cyanides (total and free); PAHs (naphthalene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenzo(ah)anthracene, benzo(ghi)perylene).

A Detailed Quantitative Risk Assessment (DQRA) was then undertaken which entailed derivation of site-specific assessment criteria (SSACs) for the identified principal contaminants of concern.

This DQRA showed that the reported concentrations of lead, total cyanide, free cyanide and PAHs (benzo(a)anthracene, chrysene, benzo(a)pyrene and dibenzo(ah)anthracene) in the soils within the north-eastern corner of the, exceeded the SSACs. Several soil samples from this area of the site were also found to contain fragments of Chrysotile asbestos. The report concluded that a long-term solution was required to address the risks posed by these substances.

Parsons Brinkerhoff concluded that shallow soils across the remainder of the school site did not contain significantly elevated contaminant concentrations. Marginally elevated PAH concentrations were identified, though following the DQRA, these were deemed to not represent a significant risk to current site users.

Part 2A of the Environmental Protection Act 1990 gives Local Authorities responsibility for deciding whether or not land meets the statutory definition of Contaminated Land as given in that Act. Local Authorities can exercise their judgement in making this decision, provided this is based on sound scientific evidence and reasonable consideration of the site and local conditions.

On the basis of the evidence presented in the Parsons Brinkerhoff Report (2010), Atkins Ltd Reports (2009) and the Terramech Ltd Report (2009), Slough Borough Council consider the concentrations of lead, total cyanide, free cyanide, PAHs (benzo(a)anthracene, chrysene, benzo(a)pyrene and dibenzo(ah)anthracene) and chrysotile asbestos identified within the area of the former gas works represent a Significant Possibility of Significant Harm.

REFERENCES

Part 2A, Environmental Protection Act 1990.

DEFRA, Department for Food, Environment and Rural Affairs, 2006, Circular 01/2006, Environmental Protection Act 1990: Part 2A, Contaminated Land, DEFRA.

Environment Agency. 2004. Model Procedures for the Management of Contaminated Land. CLR 11.

DEFRA, 2008. Guidance on the Legal Definition of Contaminated Land.

DEFRA, 2005. Soil Guideline Values and the Determination of Land as Contaminated Land under Part IIA. Contaminated Land Advice Note CLAN 2/05. September 2006.

Atkins Ltd. *Assessment of Potential Part 2A Priority Site, Colnbrook Gasworks (1416)*. May 2009. Colnbrook 1416 rev2.

Terramech Ltd. *Phase 1 & 2 Environmental and Geotechnical Investigation No. 2913/09 at Colnbrook Primary School, The High Street, Colnbrook*. April 2009.

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