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Detailed inspection of radioactive contaminated land under Part 2A EPA 1990

**Guidance for local authorities on the collation
and assessment of documentary information
B20(a)**

DETAILED INSPECTION OF RADIOACTIVE CONTAMINATED LAND UNDER PART 2A EPA 1990: GUIDANCE ON THE COLLATION AND ASSESSMENT OF DOCUMENTARY INFORMATION

Introduction

This is a guidance document to help local authorities carry out detailed inspection of potential radioactive contaminated land sites under the extended Part 2A regime. It deals specifically with the collation and assessment of documentary information in accordance with B.20(a) of the Statutory Guidance for England and that for Wales.

This guidance document is designed to ensure the appropriateness and consistency of B.20a inspection carried out by local authorities, and of the information arising from those inspections. Local Authorities should have regard to this guidance and any other advice provided by the Environment Agency when carrying out desk study work.

This document is divided into three parts

- A suggested desk study report format with a description of each section of the report.
- Appendices with further information on some sections of the report
- References to relevant technical publications dealing with site investigation and risk assessment

Note:

1. Radioactive contamination may be present on land alongside or mixed with conventional contaminants. Where this is the case inspection should consider all potential pollutant linkages (radioactive and conventional). To assist, we have included references to statutory guidance for inspection of conventional contamination as well as references for inspection for radioactive substances.
2. While the document supports local authority inspection under the extended Part 2A regime other parties may also find this document useful in planning, carrying out and reporting investigation of their own land where radioactivity or mixed contamination may be present.

Associated documents

- Environment Agency guidance for visual inspection and limited surveys of potential radioactive contaminated land (the B20b guidance).

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Section 1.0 Introduction and Context

Sub-sections 1.1-1.3 give the overview of Part 2A, set the context for this phase of inspection (the collation and assessment of documentary information) and describe how decisions are made within Part 2A. These sub-sections are generic and apply to all phases of inspection. The Statutory Guidance for England and Wales contains this information.

Sub-section 1.4 is a short introduction to the land being inspected.

- identify the land in question by its postal address (where possible) or by the provision of a six figure National Grid reference
- give an approximate indication of the size of the site
- provide a brief description (e.g. housing estate on site of former thorium works).

Sub-section 1.5 is a summary of information that the local authority used to decide there were reasonable grounds for believing that the land in question may be radioactively contaminated land within the meaning of Part 2A. Local authorities must demonstrate how this information meets the requirements for reasonable grounds. See paragraph B.17A in the Statutory Guidance for requirements of “reasonable grounds”. **The Environment Agency will not consider the findings of any reports that do not demonstrate that the requirements for “reasonable grounds” have been met.**

Section 2.0 Objectives

The objective of inspection in accordance with paragraph B.20a in the Statutory Guidance is to obtain sufficient documentary or other information to enable the local authority to determine:

- Whether the land meets the statutory definition of contaminated land
- Whether the land meets the statutory definition of a Special Site
- If there is not yet sufficient information available, what information needs to be collected via further detailed inspection to allow these decisions to be made.

The desk study must obtain information on the pollutant linkages attributable to radioactivity, which the local authority has reasonable grounds for believing are present on the land; identify any further pollutant linkages that may be present at the site; and build a greater understanding of the general site conditions.

Section 3.0 Information Collation

For each sub-section include a summary of all the information collated with references to the source(s) of information. See [Appendix A](#) for a list of minimum information to be included.

The report should make clear where information is not available. For example, if a local authority is unable to identify any past site investigations, this should be reported under sub-section 3.2.5, along with the information sources that were searched.

Assessment of the collated information should be reported in section 4.

Section 4.0 Information Assessment

Present the assessment of the collated information. This should include:

- a description of the site, current land use and activities, including temporary activities
- a description of the surrounding land use
- a history of the site and its former uses
- environmental setting.

Include maps, plans, photographs, consultation responses and supporting information relevant to the assessment in the appropriate appendices and reference them in section 4.0. Discuss other information such as details of buried/ overhead services and plant and access restrictions in sub-section 4.2.7. Include any land ownership or company information gathered as part of the desk study in sub-section 4.2.7 as well.

Section 5.0 Conceptual Model

A conceptual model is a pictorial and/or descriptive representation of the area of contamination, the surrounding above and below ground environment, the processes (e.g. volatilisation, leaching) acting on substances that are present and the potential pollutant linkages that need to be assessed as part of the detailed inspection.

The conceptual model plays a pivotal role throughout the inspection process under Part 2A EPA 1990. Development of the conceptual model is an iterative process. See the links below for more detail about developing and reporting the conceptual model.

For Part 2A the conceptual model comprises three elements:

- A [textual explanation](#) of each identified pollutant linkage and its constituent parts. Reported in sub-sections 5.1 to 5.4
- A [summary table of identified pollutant linkages](#). This is a list of the pollutant linkages described in sub-section 5.4.
- A [site plan and schematic cross-sectional diagram](#) (if appropriate) presenting likely contaminant distribution, migration pathways and receptor location. This should accompany the pollutant linkage summary table in Appendix E.

Discuss any gaps in information in Sub-section 5.5. This might include the need for site data, whether people have access to the particular areas where radioactivity is thought to be present or information about the condition of the land ([See Appendix B.4](#)). Recommendations for further work in sub-section 7.2 will need to identify further detailed inspection to fill the gaps in information.

Section 6.0 Evaluation of the Significance of Pollutant Linkages

To determine whether land meets the definition of contaminated land there must be

1. A contaminant, a pathway(s), and a receptor forming one or more pollutant linkage(s) present in, on or under the land (reported under section 5.0); and
2. the identified pollutant linkage must be significant within the context of Part 2A.

To establish the significance of any identified pollutant linkage(s) the local authority needs to assess whether any of the pollutant linkages attributable to radioactivity, identified (in section 5.0) as being present on the land, are:

- resulting in harm (so far as is attributable to radioactivity) being caused to any human being; or
- present a significant possibility of harm (so far as attributable to radioactivity) being caused to any human being.

The local authority should also consider whether any other pollutant linkages (not attributable to radioactivity), identified (in section 5.0) as being present on the land, are:

- resulting in significant harm being caused to the receptor in the pollutant linkage;
- present a significant possibility of significant harm being caused to that receptor;
- are resulting in the pollution of the controlled waters which constitute the receptor; or
- are likely to result in such pollution.

See [Appendix C](#) for definitions, references and advice on establishing the significance of pollutant linkages.

Section 7.0 Conclusions & Recommendations

Local authorities should present the conclusions of the work carried out in the previous section in sub-section 7.1.

It is possible that review of documentary information alone could provide sufficient information to complete the inspection and conclude whether land is contaminated land or not. However, in many circumstances further detailed inspection will be required in order to make this decision.

Local authorities will need to gather further information via detailed inspection if there is insufficient information to identify if pollutant linkages exist or if they are significant. The recommendations in the desk study report (sub-section 7.2) should outline the further work required (visual inspection, surveys or intrusive investigation) to confirm if any pollutant linkage exists and if it is significant. A guidance note on visual inspection and limited surveys for radioactive contaminated land is available from the Environment Agency website (the B20b guidance).

APPENDIX A - SUGGESTED MINIMUM INFORMATION FOR REVIEW

- Current ownership
- Size and location
- Current use of site and surrounding land
- Details of use of the site (from site visit – receptors of concern)
- Historical use of site and surrounding area, Trade Directories (current and historic)
- Planning register details
- Public Records Office information
- Environmental health department records
- Authorisations for the accumulation or disposal of radioactive waste within vicinity or on site
- Registrations of the keeping or use of radioactive materials within vicinity or on site
- Pollution incidents within vicinity and on site, emergency response records (e.g. explosion, fire, spillages etc)
- Details of any accidental releases through operations on site
- Existing site investigation, assessment and remediation records if available
- Existing operational records, environmental audit etc
- Effluent discharge consents
- Aerial photographs
- Old OS maps (1:2500 and 1:10 000 /1:10 560)
- Building control records with a view to control measures, special construction measures which may have been used
- Evidence of any filling on the site including related disposal information (e.g. such as the nature, age and timing of fill materials and disposal activities)
- Industry Profiles for information on the types of contaminants which may be present
- Discussion with current and past owners and occupiers
- BGS borehole records
- Details if susceptible to flooding
- Service Plans

APPENDIX B – CONCEPTUAL MODEL DEVELOPMENT

For Part 2A, the conceptual model must comprise the following elements:

- ❑ A textual explanation of identified pollutant linkages and their constituent parts.
- ❑ A summary table of identified pollutant linkages.
- ❑ A site plan and schematic cross-sectional diagram (if appropriate) presenting likely contaminant distribution, migration pathways and receptor location.

The conceptual model is not complete unless all three elements are provided. By setting out the conceptual model in this way it is easy to identify the additional information needed to confirm particular pollutant linkages or evaluate the significance of identified pollutant linkages

B.1 Textual Explanation of Pollutant Linkages

The conceptual model must initially identify each contaminant, each receptor and each exposure pathway separately. These components can then be assembled into pollutant linkages (the consideration of whether they are significant or not should be reported under section 6.0 of the report).

The text accompanying the summary table and plans must include the following types of information:

- ❑ Discussion of all the likely contaminants, their properties and location (sub-section 5.1).
- ❑ Discussion of the pathways potentially occurring (sub-section 5.2).
- ❑ Discussion of the Part 2A receptors present (sub-section 5.3).

The Statutory Guidance defines a contaminant, pathway and receptor as follows:

- Contaminant – “is a substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters”;
- Pathway – “is one or more routes or means by, or through, which a receptor: (a) is being exposed to, or affected by, a contaminant, or (b) could be exposed or affected”; and
- Receptor – “is either (a) a living organism, a group of organisms, an ecological system or a piece of property which (i) is in a category listed in Table A as a type of receptor, and (ii) is being, or could be, harmed, by a contaminant; or (b) controlled waters which are being, or could be, polluted by a contaminant; or (c) any person who is, or could be, subject to lasting exposure so far as attributable to radioactivity”.

Use the information in section 4.0 of the report and boxes 1.1, 1.2 and 1.3 below when preparing sub-sections 5.1 - 5.3 of the report. Justify why contaminants, pathways and receptors are included or discounted.

Information within the following tables is relevant to the development of conceptual models for both radioactive contaminated land and conventional contaminated land. Where the information is only pertinent to conventional contaminated land *italicised text* has been used.

| Box B1.1 – Contaminant Information | | |
|---|-----------------|--|
| | Considerations: | Details: |
| 1 | Types | Identification of contaminants of concern based upon site history (see notes). |
| 2 | Properties | Physical properties of contaminants such as solubility, density, viscosity, Henrys Law Constant, Partition coefficients etc. affecting mobility and hence location on site. |
| 3 | Form | Solid phase (particles), Sorbed phase (bound to soil), Free Phase (NAPL's), Vapour Phase (in soil & air) and Dissolved Phase (in groundwater & pore water) |
| 4 | Distribution | Point Sources (pipes & tanks) Diffuse Sources (stack emissions and landspreading), possible lateral extent, concentration and depth profiles. Complicating Effects: De-commissioning, redevelopment and partial remediation |
| <p>Notes:</p> <p>Local authorities should identify contaminants or groups of contaminants (e.g. by using DoE Profiles) capable of causing harm within the meaning of Part 2A. Flora, fauna and building materials may be susceptible to a wide range of contaminants, not all of which are toxic to humans. Guidance on some of the primary contaminants of concern and their receptors can be found in CLR8.</p> | | |

| Box B1.2 – Receptor Information | | |
|--|---|---|
| | Considerations: | Details: |
| 1 | Land-Use | Identification of current land uses as defined within Part 2A. (see Note 1) |
| 2 | Humans (see Note 2) | Critical receptor identification (children or adults), Exposure Averaging Areas (based upon receptor behaviour) – Guidance available in CLR 7 and CLR 10 (see references) |
| 3 | <i>Ecosystems (See Note 3)</i> | <i>Habitat and ecosystem descriptions, species composition, temporal trends & animal and plant distributions</i> |
| 4 | <i>Property: Flora & Fauna (See Note 3)</i> | <i>Identification of crops, domestic produce, livestock, owned or domesticated animals, wild animals subject to shooting or fishing rights</i> |
| 5 | <i>Property: Buildings (See Note 3)</i> | <i>Buildings (including constituent material types) and Ancient Monuments</i> |
| 6 | <i>Controlled Waters (See Note 3)</i> | <i>Identification of Coastal waters, inland freshwaters, ponds, lakes, rivers, watercourses and groundwater.</i> |
| <p>Notes:</p> <p>1. Current use can include any Temporary use; Development not requiring new or amended planning permission; any informal use, whether authorised or not. For agricultural use only habitually grown crops or reared animals should be considered.</p> <p>2. Humans are the only receptors to be considered for pollutant linkages attributable to radioactivity</p> <p>3. These receptor groups are only relevant to consideration of pollutant linkages attributable to non-radioactive contaminants</p> | | |

| Box B1.3 – Pathway Information | | |
|---|------------------------|---|
| | Considerations: | Details: |
| 1 | Direct Exposure | Direct contact with the contaminant (dermal, plant roots, building materials etc.), Direct Ingestion (of contaminated soil or drinking water for example), gamma dose |
| 2 | Indirect Exposure | Inhalation of vapours or dust in air, ingestion of contaminated foods, migration into controlled waters |
| <p>Notes: Assessing viable pathways requires the application of common sense and general scientific knowledge about the nature of a particular contaminant, including how it may move or be transported, the circumstances of the land in question (e.g. geology, hydrogeology etc.) and the behaviour of certain receptor types on the site (primarily applicable to humans and other living organisms).</p> | | |

Sub-section 5.4 should:

- Identify all pollutant linkages of concern. These are then listed in the summary table (see below).
- Identify any pollutant linkages initially considered but now excluded
- Justify inclusion or omission of all pollutant linkages by reference to the available evidence. The justification is important because it allows those not involved in the construction of the conceptual model to follow the thought process employed in its construction.

B.2 Summary Table of Potential Significant Pollutant Linkages

See Table B1 for an example of the format expected for a summary table. The pollutant linkages included in the summary table are those discussed in sub-section 5.4.

Use the following protocol^{*(see Note below)} when compiling and presenting pollutant linkages in a summary table:

- For radioactive contamination all substances containing radionuclides may be grouped and listed together. For non-radioactive contamination list each contaminant separately, unless the substances are compounds of the same element or have similar molecular structures, and it is the presence of that element or particular type of molecular structures that determine the effect that the substances have on the receptor.
- List receptors separately but group under the categories specified in the Statutory Guidance. Linkages relating to radioactivity will only be relevant for human health. List these linkages separately from non-radioactive linkages.
- Pathways linking each contaminant to each receptor should be specified individually, but grouped together when they link the same contaminant with the same receptor. For example list dermal contact, inhalation and ingestion together not on three separate lines if they all apply to link the same contamination with a person.
- Provide each pollutant linkage with a unique identification number.

Table 1 provides an example of a summary table of five pollutant linkages associated with a derelict former gas mantle manufacturing works site, contaminated with a radioactive contaminant (thorium) and a 'conventional' contaminant (lead).

Table B1 – Example of a Pollutant Linkage Summary Table for Radioactive Contaminated Land

Site Name and ID reference

National Grid Reference

Date

Conceptual Model Version

| Linkage Id. No. | Contaminant | Pathways | Receptor |
|--------------------------|-----------------------------------|---|---|
| Humans | | | |
| 1 | <i>Radionuclides (Thorium)</i> | <i>Inhalation of dust; Direct Ingestion of soil Radiation exposure due to proximity of source</i> | <i>Humans (children gaining unauthorised entry to site)</i> |
| 2 | <i>Lead and compounds of lead</i> | <i>Inhalation of dust; Direct Ingestion of soil</i> | <i>Humans (children gaining unauthorised entry to site)</i> |
| Controlled Waters | | | |
| 3 | <i>Radionuclides (Thorium)</i> | <i>Not applicable</i> | <i>Not applicable</i> |
| 4 | <i>Lead and compounds of lead</i> | <i>Migration via site drainage network</i> | <i>Surface waters (Town Beck)</i> |
| 5 | <i>Lead and compounds of lead</i> | <i>Leaching from contaminated soil</i> | <i>Groundwater</i> |

***Note:** The protocol for describing pollutant linkages follows the statutory guidance. It is important to follow this protocol when preparing any official record of the determination of land as Contaminated Land. However, at the early stage of an inspection where there may be a lack of data concerning the actual presence of contaminants on a site (see B4) a large number of potential pollutant linkages could be identified. In these circumstances it is acceptable to summarise the linkages in an alternative manner if this improves the clarity of presentation, providing that (as a minimum) all contaminants of concern can be identified in some way.

B.3 Site Plan and Schematic Cross-section

A site plan and a schematic cross-section will put the conceptual model into context and link the identified pollutant linkages to the area of land under inspection.

The site plan should identify the area of land being inspected and the possible or actual location of contaminant sources on the site. It can also illustrate the spatial relationship between the potential/actual contaminant sources and the identified Part 2A receptors.

A schematic cross-section will illustrate the distribution and possible migration of contaminants in the sub-surface.

B.4 Identifying Information Gaps in the Conceptual Model

In order to be sure that a pollutant linkage exists, local authorities must evaluate the basic uncertainties in the data underpinning the conceptual model and identify whether any additional data regarding the presence of contaminants, pathways or receptors needs to be obtained via the detailed inspection process. Uncertainties arise where there is limited information available about parts of the pollutant linkage and assumptions are made as to the likelihood of the contaminant, pathway and receptor forming each pollutant linkage. For example a contaminant is considered likely to be present but data is not available at the desk study to confirm it is present. A gap in information therefore exists and further detailed inspection is needed to confirm the presence and location of the contaminant on site.

Note: At desk study stage a pathway can be established based upon a reasonable assessment of the general scientific knowledge about the nature of a particular contaminant and the circumstances of the land in question. Direct observation of the pathway is not always necessary.

Local authorities should initially consider the following when evaluating the conceptual model:

- have all contaminants of concern been identified;
- have all potential Part 2A receptors been identified;
- have all viable pathways been identified, and therefore;
- have all pollutant linkages of interest been identified?

Local authorities should then consider, for **each** identified pollutant linkage, whether there is already sufficient evidence to prove that the contaminants, pathways and receptors are actually present at the site. If there is then they can go on to consider whether there is enough information to allow an evaluation of the significance of the pollutant linkage ([See Appendix C](#)).

Where there is not sufficient evidence to prove that the pollutant linkage is present, the local authority should consider whether or not there are sufficient grounds for further detailed investigation.

APPENDIX C – ASSESSING THE SIGNIFICANCE OF POLLUTANT LINKAGES

Local authorities should use the advice contained in this Appendix to assess the significance of the pollutant linkages identified in section 5.0 of the report. The results of this work should be presented under sections 6.1 & 6.2 of the report template.

The local authority should consider whether any pollutant linkages identified by the conceptual model are significant in the context of Part 2A. Uncertainties in the information or data available from the site might mean it is not possible to make a decision of significance until further information is available for the linkage.

C.1 Identifying uncertainties arising from the assessment of significance

Local authorities may need to gather additional information to assess the significance of pollutant linkages in order to complete the assessment to the required level of confidence (as set out Boxes C.1 and C.2). In these cases it will be necessary to gather additional information through further detailed inspection.

The types of uncertainties that can affect the evaluation of significance include but are not limited to:

- ❑ Reliability and accuracy of past documentary & radiological survey information. For example are decisions being made on anecdotal information rather than documentary evidence? A decision may need to be taken regarding the accuracy of past survey information taking account of the quality control/assurance measures employed at the time.
- ❑ Relevance of past survey information. For example was survey work carried out pre or post remediation? If the land condition has changed is the survey information still valid?
- ❑ Contaminant location & distribution. For radioactive contamination has the entire area of interest been covered or is further work needed to tightly define the areas of concern or the depth of suspected contamination?
- ❑ Receptor, land use & exposure characteristics. Do you know how the site is used and by whom? Do you have the necessary parameters to use relevant risk assessment tools?
- ❑ The level, degree or suitability of the exposure (risk) assessment. For example is the contamination case sufficiently clear cut to consider determination based upon generic assessment criteria such as soil SGV's or screening analysis tools such as RCLEA. If there are doubts then further information would need to be collected to carry out a detailed quantitative risk assessment (DQRA) tailored to the site circumstances. This will usually be the case for radioactive contamination where site specific exposure assessments will be required to justify regulatory intervention.

For non radioactive substances these may also be important

- ❑ Evidence to support suspected cases of harm. This is especially relevant for conventional contamination cases where corroboration and/or supporting opinion from the Health Protection Agency, English Nature or the Countryside Council for Wales is needed.
- ❑ Evidence to support suspected cases of pollution.
- ❑ The number of samples required across the averaging area to allow statistically valid analysis.
- ❑ Soil parameters required to enable fate and transport modelling
- ❑ The validity of pathways given the subsurface physical environment (geology & hydrogeology).

C.2 Assessing harm (so far as attributable to radioactivity)

The Statutory Guidance on harm (so far as attributable to radioactivity) is set out within paragraphs A.40 to A.44 and B.51A.

Part 2A defines harm (so far as attributable to radioactivity) as meaning “lasting exposure to any human being resulting from the after effects of a radiological emergency, past practice or past work activity. When considering whether “harm (so far as attributable to radioactivity) is being caused” the Statutory Guidance requires an appropriate scientific and technical assessment of all the relevant and available evidence to be made, having regard to any advice provided by the Environment Agency. A judgement can then be made on “the balance of probabilities” to decide whether harm is being caused.

The definitions of harm given within the Statutory Guidance have been reproduced and are presented in Box C.1 along with accompanying guidance and advice from the Environment Agency. Local authorities should refer to Box C.1 when evaluating the significance of pollutant linkages identified by a B.20(a) inspection.

| Box C.1 – Harm (so far as attributable to radioactivity) | |
|---|---|
| Type of Receptor | Description of harm that is to be regarded as harm (so far as attributable to radioactivity) |
| Human beings | <p>Where lasting exposure gives rise to doses that are equal to or exceed one or more of the following:</p> <ul style="list-style-type: none"> (a) an effective dose of 3 mSv per annum; (b) an equivalent dose to the eye of 15 mSv per annum; or (c) an equivalent dose to the skin of the 50 mSv per annum <p>the estimation of an effective dose and an equivalent dose should be undertaken in accordance with Articles 15 and 16 of Council Directive 96/29/Euratom. The estimation of an effective or equivalent dose should not include the background level of radiation from the natural environment.</p> |
| | <p>Additional Advice or guidance from the Environment Agency</p> <p>Radiological exposure assessments should be carried out by individuals with relevant capabilities and experience. The exposure assessment tool RCLEA should be used as the first step in assessing exposure to radioactive contamination. If the output from RCLEA indicates that the radiation dose criteria are exceeded, a further, more detailed assessment will be required. This more detailed assessment should involve checking that all input parameters and underlying exposure assumptions within the model are relevant to the actual conditions existing on the site. If necessary the exposure should be recalculated using representative site data and exposure assumptions. Information about RCLEA can be found in CLR13, 14 and 15, which are available from Defra’s Contaminated Land Publications page.</p> |

C.3 Assessing the significant possibility of harm (so far as attributable to radioactivity)

The Statutory Guidance on the significant possibility of harm (so far as attributable to radioactivity) is set out within paragraphs A.45 to A.51 and B.51B. Significant possibility of harm (so far as attributable to radioactivity) is defined as “referring to a measure of the probability, or frequency, of the occurrence of circumstances which would lead to lasting exposure being caused”.

When considering whether “a significant possibility of harm (so far as attributable to radioactivity) is being caused” the Statutory Guidance requires the local authority to have “carried out a scientific and technical assessment of the risks arising from the pollutant linkage, according to relevant, appropriate, authoritative and scientifically based guidance on such risk assessments”. In doing so they must have regard to any advice provided by the Environment Agency before making a judgement on “the balance of probabilities”.

| Box C.2 – The Significant Possibility of Harm (so far as attributable to radioactivity) | |
|--|---|
| Type of Receptor | Conditions for there being a significant possibility of harm (so far as attributable to radioactivity) |
| Human beings | Except where the conditions in the subsequent row apply, in deciding whether the possibility of harm being caused is significant, the local authority should take into account relevant information concerning: <ul style="list-style-type: none"> (a) the potential effective dose; (b) any non-linearity in the dose effect relationship for stochastic effects; (c) the equivalent dose to the skin or the lens of the eye; (d) the nature and degree of any deterministic effects associated with the potential dose; (e) the probability of the dose being received and associated uncertainties in the estimation of this probability; (f) the duration of the exposure and timescales within which harm might occur. |
| | Where: <ul style="list-style-type: none"> (a) the potential annual effective dose is below 50 mSv per annum; and (b) the potential dose equivalents to the lens of the eye and to the skin are below 15 mSv per annum and 50 mSv per annum respectively, <p>The local authority should regard the possibility of harm as significant if, having regard to any uncertainties, the potential annual effective dose of any lasting exposure multiplied by the probability of the dose being received is greater than 3 mSv.</p> |
| | Additional Advice or guidance from the Environment Agency |
| | Radiological exposure assessments should be carried out by individuals with relevant capabilities and experience. Potential annual effective doses and dose equivalents should be calculated having regard to conventional protocols, to generic data and assumptions drawn from the RCLEA model, and to the actual site circumstances. Information about RCLEA can be found in CLR13, 14 and 15, which are available from Defra’s Contaminated Land Publications page. |

C4 Assessing significant harm, the significant possibility of significant harm, pollution or likely pollution

As this guidance relates predominantly to the assessment of risks attributable to radioactivity it is not proposed to offer detailed technical advice here on assessing the significance of risks posed by conventional contamination. However, statutory and technical guidance does exist and can be found in the documents listed in the reference section at the end of this document.

- The definitions above can be found in Chapter A and Tables A & B of the Statutory guidance.
- Technical guidance on human health risk assessment can be found in Contaminated Land report No.s 7 to 10 inclusive.
- Technical guidance on controlled waters risk assessments can be found in the Environment Agency's guidance to third parties on assessing pollution under Part 2A.

Updates on relevant CLR or other publications relevant to the Part 2A regime can be obtained by monitoring the Defra, Welsh assembly Government and Environment Agency websites.

TECHNICAL INFORMATION REFERENCES

The following documents provide further technical information that may assist local authorities in the collation and assessment of documentary information undertaken as part of the detailed inspection of potential radioactive contaminated land:

- RCLEA: The Radioactively Contaminated Land Exposure Assessment Methodology Defra 2006, CLR13, 14 & 15
- Dose Criteria for the Designation of Radioactively Contaminated Land KR Smith, SF Mobs, JR Cooper, HPA , 2006
- Industry Profile (Industrial activities which have used materials containing radioactivity), Defra, 2006
- Industry Profiles (Various), DoE, 1996
- Remedial Treatment for Contaminated land: Volume III - Site Investigation and assessment, CIRIA, 1999
- CLR Report No 3, Documentary Research on Industrial Sites, DoE, 1994
- CLR Report No 2, Volume 2: Guidance on Preliminary Site Inspection of Contaminated Land, DoE, 1994
- Land Contamination: Technical guidance on Special Sites (various), Technical Report P5-042/TR/01 to 06, Environment Agency, 2001
- CLR Report No 11, Model Procedures for the management of contaminated land. DEFRA and Environment Agency *2nd Ed in preparation by Defra*
- Technical Aspects of Site Investigation. Environment Agency R&D Technical Report P5-065, Environment Agency, 2000
- British Standard 10175 Investigation of Potentially Contaminated Sites – Code of Practice, BSI, 2000
- Guidance on the Characterisation and Remediation of Radioactively Contaminated Land, Environment Agency, 2002 *to be up-dated by Agency*
- R&D Report - Technical Report P307, Technical Support Materials for the Regulation of Radioactively Contaminated Land, Environment Agency, 1999
- Best Practice Guidance for Site Characterisation – Managing Contaminated Land on Nuclear-licensed and Defence Sites, SAFEGROUNDS Learning Network, CIRIA, 2000
- CLR Report No 7, Assessment of risks to human health from land contamination: An overview of the development of soil guideline values and related research, DEFRA & Environment Agency, 2002
- CLR Report No 8, Potential contaminants for the assessment of land, DEFRA & Environment Agency, 2002
- CLR Report No 9, Contaminants in soil: Collation of toxicological data and intake values for humans, DEFRA & Environment Agency, 2002
- CLR Report No 10, The contaminated land exposure assessment model (CLEA): technical basis and algorithms, DEFRA & Environment Agency, 2002
- Technical advice to third parties on pollution of controlled waters for Part 2A of the Environmental Protection Act 1990, Environment Agency, 2002

Please note that the terminology in some of this documentation may differ from that used in Part 2A EPA1990